REPORT RESUMES

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ADULT EDUCATION INFORMATION SERVICES, ESTABLISHMENT OF A PROTOTYPE SYSTEM FOR A NATIONAL ADULT EDUCATION LIBRARY AND APPENDICES. THREE PARTS.

BY- DECROW, ROGER AND OTHERS
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RESULTS ARE REPORTED OF A STUDY OF THE FEASIBILITY OF A NATIONAL ADULT EDUCATION INFORMATION CENTER, IN WHICH IT WAS PROPOSED TO (1) STUDY INFORMATION PROBLEMS AND RESOURCES IN ADULT EDUCATION AND RECOMMEND NEW SERVICES WHICH WOULD BE MOST USEFUL TO THE FIELD , (2) DEVELOP THE TOOLS OF SUBJECT ANALYSIS WHICH WOULD BE NEEDED IN THESE SERVICES, AND (3) EXPLORE THE USE OF NEW METHODS OF INFORMATION HANDLING IN THE PROPOSED SERVICES. THE REPORT IS IN SIX SECTIONS. SECTION I REVIEWS CHARACTERISTICS OF THE FIELD OF ADULT EDUCATION. SECTION II TAKES UP THE NATURE OF THE LITERATURE AND PROBLEMS OF ACQUISITION AND SELECTION. SECTION III INCLUDES SUCH PROBLEMS OF BIBLIOGRAPHIC AND SUBJECT ANALYSIS AS CITATIONS, ABSTRACTING, AND INDEXING. SECTION IV DESCRIBES THE WORK IN THE DEVELOPMENT AND EVALUATION OF EXPERIMENTAL INPUT AND SERVICE PRODUCTS, WITH PARTICULAR ATTENTION TO THE ADAPTATION OF MECHANIZATION DEVICES AND TO SYSTEM ANALYSIS PROBLEMS. SECTION V OUTLINES A MODEL INFORMATION SYSTEM AND SECTION VI SPECIFIES THE PARTS OF THIS MODEL WHICH MAY BE PROVIDED BY AN ERIC CLEARINGHOUSE ON ADULT EDUCATION. APPENDIXES ARE DOCUMENTS, STAFF MEMORANDUMS, AND CHARTS WHICH SUPPLEMENT THE REPORT. (EB)

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FINAL REPORT
Project No. D-152
Contract No. OE5-10-118

ADULT EDUCATION INFORMATION SERVICES: ESTABLISHMENT OF A PROTOTYPE SYSTEM

Part I

December 1, 1967

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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FINAL REPORT

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ADULT EDUCATION INFORMATION SERVICES: ESTABLISHMENT OF A PROTOTYPE SYSTEM FOR A NATIONAL ADULT EDUCATION LIBRARY

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December 1, 1967

The research reported herein was performed pursuant to a contract with the Office of Education, U.S.Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

ERIC Clearinghouse
JUL 31 1968
on Adult Education

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INTRODUCTION

This is the final report of Contract OE5-10-118, Project D-152, conducted by the Library of Continuing Education at Syracuse University under a contract with the Cooperative Research Program of the U.S. Office of Education.

The project was entitled "Establishment of a Prototype System for a National Adult Education Library," and its basic purposes, briefly summarized from the contract, were: (1) to analyze information needs and content in the field of adult education; (2) to develop and evaluate a classification system suited to handling of adult education information; (3) to explore the use of computers or other mechanization devices in this work; and (4) to make recommendations for a model information system serving adult education.

In effect, the project staff were asked to study information problems and resources in adult education and to recommend new services which would be most useful to the field, to develop the tools of subject analysis which would be needed in these services, and to explore the use of new methods of information handling in the proposed services. It was agreed that no ongoing services were to be established during the contract period; that no fundamental research on the intellectual problems of information retrieval was to be undertaken; and that no massive body of material was to be put into machine-readable form. Funds were provided, however, for small experimental tests of the proposed services and for small-scale mechanization experiments for feasibility and cost analysis purposes.

A development of major importance took place during the contract period. This was the establishment and quick movement to operational status of the Educational Resources Information Center (ERIC) in the U.S. Office of Education. Since the ERIC network is developing, for the broader field of education, many of the services which the Library of Continuing Education (LCE) regards as of highest priority in adult education, Syracuse University requested termination of the project described in this report before its scheduled termination date. Since the methods, as well as the objectives, of ERIC are basically similar to those developed by LCE during this project, we have agreed with project monitors to give especial attention in this final report to findings and experience which may have potential meaning or application in the development of the ERIC information network.

The Library of Continuing Education at Syracuse University viewed the work of this project neither as "research" in the usual meaning of that term nor as the development of an operational information service, but rather as a planning and system design assignment intended to assess the feasibility of all elements of the system being planned. The work advanced in three major phases.

Phase One consisted of: (1) reviewing techniques for analyzing information needs; (2) examination of the adult education field and its present information services; (3) study of a wide range of information systems, techniques and mechanization aids; (4) extension of the document acquisition programs already functioning in the Library of Continuing Education; and (5) establishing the project physically and administratively at Syracuse University. This phase may be said to have ended when the following decisions had been reached: (1) to focus on two particular types of information services (ongoing annotated listing of current publications and computer-aided information retrieval system); (2) to use abstracting and a coordinate indexing method; (3) to base scope and coverage on a formal definition of adult education; and (4) to use the Friden Flexowriter for computer input and other noncomputer applications.

These decisions led into Phase Two, during which work centered on: (1) developing the intellectual tools of document analysis (citation rules, abstracting techniques and a thesaurus of indexing vocabulary); (2) Flexowriter programming for multiple uses based on a standard document resume form; (3) commissioning computer input and output programs; (4) assembling a "test collection" of 500 documents on adult learning methods; (5) producing two experimental issues of "Continuing Education Abstracts" to initiate user interaction and evaluation; and (6) the training of staff for these tasks. We may say that this phase ended around June, 1966, when the rapid progress of ERIC made some parts of the project (for example computer programming experimentation and the development of a separate adult education thesaurus) redundant or uneconomical in light of the capabilities of this larger information network.

The final months of the project, Phase Three, were largely devoted to bringing local established procedures into compatibility with ERIC network requirements. Some of the changes included: (1) the reprogramming of a different model Flexowriter; (2) replacing the LCE worksheet with the ERIC resume form; (3) working with the Panel on Educational Terminology on a thesaurus suited to ERIC needs; (4) bringing LCE scope and coverage into alinement with ERIC network requirements and adjusting acquisition procedures; and (5) retraining the project staff for these new methods, including use of the ERIC and COSATI rules for bibliographic citation. This phase ended June 1, 1967, when LCE became the ERIC Clearinghouse on Adult Education, fully operational in the ERIC network and using procedures and guidelines standard throughout the system.

Early in Phase One a decision was made to concentrate on planning for two types of information services which we judged potentially most useful to the adult educators. Planning for many other important information needs and possible services was, in effect, deferred until a basic service could be designed to provide these two essentials.

The first of these services is an ongoing and reasonably comprehensive listing, with annotations or abstracts, of the current flow of significant adult education literature. This service would be most immediately useful to a wide range of adult educators in a field where all available present knowledge and experience must be fully used if the immediate and urgent educational needs of American adults are to be met.

The second priority service is a computer aided information retrieval system, based on thorough and consistent indexing of documents which contribute to the growing body of tested knowledge which we believe underlies the long range improvement of adult education practices.

All of the work of the project reported here was aimed toward designing and testing the feasibility of these two types of proposed services.

The project was organized as an integral part of the Library of Continuing Education at Syracuse University and used the resources of that library to great advantage. A policy committee provided guidance to the staff. It consisted of Alexander N. Charters, Vice-President for Continuing Education; Clifford Winters, Jr., Dean of University College; and Wayne Yenawine, Director of the University Libraries and later his successor in that position, Warren Boes. Edward Montgomery, Dean of the School of Library Science, provided valuable technical assistance in the early phases of the project.

Project staff worked throughout the contract period in close cooperation with the Committee of Adult Education Associations, the Commission of the Professors of Adult Education, the Adult Education Association of the U.S.A., and with a wide range of agencies and individuals to whom we are grateful for their suggestions, cooperation and support.

The professional staff on June 1, 1967, when the project became operational as the ERIC Clearinghouse on Adult Education, consisted of: Roger DeCrow, Director; Diana J. Ironside, Associate Director; Ronald F. Miller, Systems Analyst; Edith Bennett, Supervisor of Documentation; Betty J. Vaughn, Supervisor of Acquisitions; and Lloyd Young, Annette John, Shigeko Mori, and Julie Alexander, part-time Literature Analysts. We are grateful to all these staff members who contributed much to the work of the project and to the preparation of this report. In particular, the work of Mrs. B. J. Vaughn, who developed the Library of Continuing Education from 1960, and Mrs. Edith Bennett, who joined the project directors in establishing the project, has been most valuable.

During this project period, no services were provided to the adult education profession, except the distribution of a monthly acquisitions list which was provided by Syracuse University from local funds.

This report reviews the project effort in the following sections: Section I reviews some characteristics of the adult education "field" which profoundly affect its information needs and set the context in which new services must be planned. The characteristics selected for review are: the volume and growth rates of educational activity in the field; the diversity of its sponsoring agencies; and its "emergent" nature as a profession and an academic discipline. This section is intended as an orientation for readers who may be unfamiliar with the nature of the adult education field and may, therefore, be optional for readers who already know the field.

Section II takes up the nature of the literature of adult education and the problems of acquiring it, selecting documents relevant to the purposes of the information services being planned and assessing their potential usefulness to the field.

In Section III the problems of bibliographic and subject analysis of adult education documents are discussed; specifically described are the procedures for bibliographic citation, for abstracting, and for thorough and consistent indexing.

Section IV describes work in the development and evaluation of experimental input and service products, with particular attention to the adaptation of mechanization devices to adult education information work and to the system analysis problems involved in planning the complex procedures required in an operating information service. Evaluation activities are also described.

Section V outlines a "model information system" outlining an array of services which we believe, on the basis of our study and experimentation, would be highly desirable in the adult education profession.

Section VI specifies the parts of this model or ideal system which it appears may be provided by an ERIC Clearinghouse on Adult Education, with comments on how the requirements of the present ERIC network relate to the particular needs of adult education. In addition, we comment in this section on other services which seem desirable and the means by which they might be initiated or planned either within ERIC or as supplementary efforts.

Section VII presents a summary of this final report, and a list of references and footnotes.

Parts II and III of the Report, issued as separate volumes, are the Appendices, composed of various documents, staff memoranda and charts which supplement the Report.

SECTION I

ANALYZING INFORMATION NEEDS IN AN EMERGENT PROFESSION

The initiation in 1964 of the project described in this report presented a rare opportunity in the information sciences. It was a chance to plan deliberately for the rational and economical development of information services to an "emergent" profession and to apply many new techniques of information handling which were being developed in large scientific and technical information centers, such as the Defense Documentation Center, NASA and the Atomic Energy Commission. These techniques, ranging from methods for studying user needs to means of evaluating services provided mainly through the use of computers and other devices, were themselves new and largely untested. At that time, they had seldom been applied on a large scale in any area of the social sciences.

The project at Syracuse University was an opportunity to apply in an orderly manner much of the cumulative knowledge acquired by librarians and a chance to study the problems of bibliographic organization throughout an entire profession, that of adult education. Many elements in what librarians sometimes call the "bibliographic pyramid" were entirely lacking. Many of the traditional tools for maximizing the usefulness of graphic records which had served more mature professions (from systematic national or subject bibliography to the provision of state-of-the-art reviews) needed to be developed. In addition, powerful new tools were being provided from the data processing and information retrieval fields which could make the provision of information more efficient than ever before.

The project staff proposed to investigate the application of both the traditional methods of bibliographic organization and many new information handling techniques to the field of adult education, extrapolating from the experience of other professions and other information systems wherever possible, but adapting the services as precisely as possible to the particular needs of adult education.

A. Definitions of Adult Education.

A single formal definition of adult education will neither satisfy all those who work in the field nor serve as a clear guide to the development of information services within that field. Yet no thinking or planning, however tentative, can proceed without some general conception of the boundaries of the field, which may then be made operational through a series of specific decisions.

We found the most satisfactory approach to a general definition of the field written by Jack London and Robert Wenkert.[1] They review the theoretical approaches to this problem without losing sight of the need, in a field so amorphous and diverse, to grasp what it actually is in daily practice. In many discussions with adult educators, we have found that the London and Wenkert views are meaningful and intelligible to most of them, even when they may disagree in some areas of emphasis.

How can adult education be differentiated from the great variety of experiences from which we all learn more throughout a lifetime than we ever do from all our formal education, however extensive it may be? London and Wenkert say:

> "All of life potentially informs, and if we were to define adult education in terms of function then we would have to include all of social life as part of adult education. Obviously this is unrealistic, both in practical terms and also because it does not accurately represent the nature of adult education as we find it in experience. Technically, and realistically, adult education refers to a more delimited area of social life, namely to those activities whose primary purpose is to educate.
>
> "This fact has a number of implications which are ordinarily disregarded. If adult education activity is the object and education the purpose, what is the subject? Whose purposes are we referring to? By themselves, activities do not have a purpose, since purpose is lodged in human beings and not in social forms. To say that certain social activities have the purpose to educate is merely a shorthand and quite inaccurate way of saying that these activities have been organized by some person, or groups of persons, for the purpose of educating.
>
> "This clarification leads to two important conclusions: (1) adult education is educational activity which takes place in an organized context, and (2) whether activity is defined as adult education depends on the purposes of the organizers of that activity. Adult education is defined from the top, so to speak, and not from the bottom.[12]

We modify this passage only to include adult education activities which are organized, extend over a period of time and are deliberately planned by an individual for the purpose of systematically informing or educating himself.

How is adult education distinguished from recreation, psychotherapy and other related activities?

> "Once again we must refer to the purposes of the

> sponsoring organizations and of their administrative personnel. Since all activities are potentially educational, there would seem to be no restriction on the content of adult education activity. We would therefore include both vocational and non-vocational education; instruction in games as well as instruction in more serious matters; indeed, we would include instruction in anything. The basic character of education is to inform--the content of the information is, for our purposes here, irrelevant. ...
>
> "Even though instruction in bridge or in folk dancing would therefore be included as an adult education activity in the United States, actually practicing these pursuits without instruction would not. ...
>
> "There are activities, however, whose primary purpose is to educate, even though they are not usually referred to as adult education. One example of such activity is psychotherapy. It would take us too far afield to discuss this interesting exception in detail, except to suggest that while the basic character of education is to inform, the primary purpose of psychotherapy is to reform."[3]

Again, we would modify this slightly to point out that the object of education may be to inform oneself about one's own feelings, perceptions and attitudes (as in sensitivity or laboratory training, or many programs of community education and development).

Is training for the performance of particular tasks, usually of a technical nature in a work situation, part of adult education?

Despite the traditional, and in our view entirely deplorable, isolation of the "training" profession from the main body of adult educators, the principles of learning underlying this kind of instruction are quite the same as those in more general adult education. Since the goals of this training are more circumscribed, the learning processes are more amenable to the controlled experimental research into adult learning which will lead to improvement of practice throughout the field. It is, therefore, of utmost importance that the "general" adult education specialist be informed of the advances being achieved in the industrial and military training fields.

The converse is equally important. Experience in programs under the Manpower Development and Training Act demonstrates that vocational and technical training cannot be rigorously divorced from more general forms of education of the individual being trained. Moreover, knowledge of the learning capacities of adults and as well as their interests and motives is as important in skill training programs as in any other part of adult education. In this project, we regarded these activities as parts of one field.

The phrase "continuing education" is used increasingly as a synonym for adult education by some parts of the field; by others, it means the further education of persons who received adequate preparatory education in the formal educational system. To still other adult educators, continuing education refers to the liberal education of adults. Our view of this concept is stated below:

> "The concept of continuing education is not synonymous with 'adult education,' but is broader in that it subsumes all aspects of the continuous nature of learning from 'cradle to the grave.' This concept of 'continuous learning' in itself is not related any more to the education of adults than it is to the education of children. If it underlies educational programming for adults, however, as it is doing increasingly, it assumes an organized concern for the educational influences in a person's life -- past, present, and future. It also exerts an integrating force on the planning of adult education, making the learning experience itself, wherever and whenever it happens in a person's life, a central concern."[4]

Can no more succinct statement of what adult education is be given? It can be viewed as any education wherein the particular nature of the student as an adult is consciously taken into account in order to improve the learning experience. Another alternative--it is all that goes on in university evening colleges and in general or Cooperative Extension divisions, in industrial and military training, in public school adult education programs, in public television, in the educational programs of churches, community agencies and the myriad other agencies traditionally regarded as part of adult education. Or, it is the area of common interest shared by the member organizations of the Committee of Adult Education Organizations, or by the individual members of the Adult Education Association, or by the subscribers to Adult Leadership.

In this project, all of these definitions have informed our attitudes to the field of adult education and to its literature. How these definitions have been incorporated operationally into our design for a model information system will be discussed in the following sections.

B. The Volume and Growth of Adult Education.

A brief review of some of the most salient facts about the nature and organization of the adult education field will illustrate some of the conditions which must be taken into account in any planning for improved information services. A first characteristic of this field which affects planning for information services is the growing volume of educational programs and the mass of adults in them. Since much of this activity is outside the formal educational system, in areas seldom labeled "education" and where record-keeping has not been institutionalized, adult educators have engaged in a guessing game for decades about how many participants are involved, who they are, and why certain types of persons (typically, the reasonably well-educated, young, middle class citizens) are so prevalent in many programs.

1. The participant.

Understanding of participation patterns has been improved decisively by the study conducted by the National Opinion Research Center of the University of Chicago in 1962 with support from the Carnegie Corporation. Based on personal contact with 90% of the households in a national probability sampling of some 13,000 households, plus intensive interviewing of a randomly selected national sample of 1800 adults, reinforced by case studies in particular localities and with particular groups, the data have been laid out with admirable precision in the volume, Volunteers for Learning, by John W.C. Johnstone and Ramon J. Rivera.[5] A review of this and other participation studies has recently been completed by Edwin B. Parker and William J. Paisley in their study, Patterns of Adult Information Seeking.[6] Condensations of three tables in the NORC report will indicate the number of separate individuals involved in adult education during a 12-month period, their dispersion among the major sponsoring agencies, the methods by which they studied, and their interest in obtaining credit for the work done.

Method of Study	Number of Different Persons
Classes	10,450,000
Discussion groups	2,300,000
Lectures or talks (series)	2,220,000
Correspondence study	1,750,000
Private teachers	1,670,000
On-the-job training	1,680,000
All other methods	290,000 [7]

Sponsoring Institutions	Number Who Attended Classes, Lectures, Talks, Discussion Groups
Churches and synagogues	3,260,000
Colleges and universities	2,640,000
Community organizations	2,240,000
Business and industry	1,860,000
Elementary and high school	1,740,000
Private schools	1,120,000 [8]

Government (all levels)	1,050,000
Armed forces	480,000
All others	240,000

Roughly 4,000,000 persons were taking courses for credit, while about 20,000,000, that is, about five times as many were not receiving credit.

A detailed analysis in the Johnstone and Rivera report of the age, sex, educational level, occupations and other characteristics of the participants, indicate that participants are drawn particularly from those population cohorts which will show the greatest growth rate in the coming decades. They predict that the number of participants will increase at least 50% by 1980.

Determined efforts are now being made to find effective ways of bringing adult education to the lower economic and educational levels groups who now least often participate, yet seem most in need of help. Should these efforts be successful, we may anticipate a further increase in rate of participation, and the development of many new types of programs in many new sponsoring agencies (for example on-the-job training for disadvantaged citizens in business and industry).

Statistical reporting of enrollment and participation is poorly developed in adult education. In so far as data are available, however, they are congruent with the NORC estimates and confirm that the predicted increases are, in fact, taking place. In higher adult education, for example, the Association of University Evening Colleges and the National University Extension Association reported 2,573,642 enrollments in 1961 and 4,578,571 in 1966, an increase of 78%.[9] Using their own projections based on current growth rates, these agencies anticipate 11,760,000 by 1980.[10]

Of 503 public junior colleges, 429 report total part-time, largely adult, enrollments of 489,676 in 1964 with the expectation of rapid growth. Part-time enrollments actually outnumber total full-time enrollments.[11]

Cooperative Extension Service reports of the work done by 10,862 extension agents in 1963 show yet another aspect of adult education, including large volumes of work not reported in the NORC study since much of it did not engage the participant in an extended program of study. Extension services involve demonstration meetings, farm visits, distribution of information circulars and many other educational activities. The work is extended by involving hosts of volunteer workers, some 1,175,000 of whom were trained during 1963.[12]

2. The adult educator.

About the number and types of workers involved in adult education, less can be said with precision, but available data support the following assertions: (1) a large number are involved, numbering certainly in the tens of thousands; (2) the cadre of trained professionals is small but rapidly growing; (3) the proportion of part-time and voluntary workers is high with a high turn-over rate; (4) a high proportion of workers are in "marginal" positions, that is, adult education is not their major assignment and adult education is a secondary purpose of the agency which employs them.

In 1963 about 10,000 Cooperative Extension agents directed the work of more than 1,000,000 part-time and voluntary workers. The National Association of Public School Adult Educators has about 10,000 members and this number has doubled in recent years; except in large school systems these are usually part-time adult education directors. The American Society for Training and Development had 4,500 members in 1966, but 5,500 in 1967.

Though graduate training in adult education has existed for thirty years, only 480 degrees at the doctoral level have been granted. Well over half of these professionals are employed in colleges and universities. Most attained the degree after age forty and, typically, after spending a good part of their professional lives in another field. The number attaining degrees has risen rapidly as has the number of institutions presenting graduate training.[13] There are, in fact, nearly as many persons enrolled in doctoral programs at this moment as have graduated from them during the entire history of the field.[14] There has been an attendant growth in research; the Annual Research Review in the Summer, 1967 issue of Adult Education reports 177 completed studies, more than double the number in the 1956 Review.[15]

The number of members of the Commission of the Professors of Adult Education has increased rapidly. In 1964, the Commission produced a book reviewing adult education as an emerging academic discipline with its own core of intellectual content, but devoting six chapters to the relationship of adult education to psychology, sociology and other disciplines on which it is still dependent for many of its basic principles. Adult education is still, in large part, the practical application to educational problems of insights from other knowledge fields.[16]

There are now 23 members of the Committee of Adult Education Associations, an informal group representing national organizations, each of which has a membership group and identifies with the adult education field. Though some of these organizations are strong and economically viable, with paid professional staff and significant services, others are one man or voluntary agencies. These agencies are listed in Appendix 1. The Handbook of Adult Education lists many other national organizations in which adult education is an important, but secondary or instrumental activity.

About 140 are listed and the list could be greatly extended if the Handbook were revised today.[17]

The urgent need for adult education as a curative attack on poverty, illiteracy, chronic unemployment of the disadvantaged, potential obsolescence of a large part of the American work force, and many other social problems, has led to rapid increase in federal support for adult education programs. There has been a corresponding up-grading of the status of adult education in federal agencies and in state education departments. Though most of these programs are focussed in the U.S. Office of Education and in the Labor Department, there is hardly a federal agency that is not actively supporting one or several adult education programs. These are reviewed in a 1965 report published by the Adult Education Association, listing more than 100 programs,[18] in a 1967 report to the President's National Advisory Committee on Extension and Continuing Education by Greenleigh Associates,[19] and in the 1967 Manpower Report of the President.[20]

C. Analysis of Needs.

In phase one of the project, the staff grappled with the problem of how to make a meaningful analysis of information needs in such a large, diffuse, and constantly changing profession. Our purpose was to examine and hold in mind the entire range of needs and potential services throughout the field, while seeking to isolate those particular services which are most urgent and most efficiently provided by a national information center.

Many techniques for the study of user needs have been developed in hundreds of such studies conducted by librarians and information scientists.[21] Audiences studied have ranged from a handful of scientists within a particular company or laboratory to efforts to plot communication flow in the American Psychological Association,[22] or to specify the needs of the hundreds of contractees of the Department of Defense.[23]

Factors studied include: reading or information seeking patterns; use of particular library collections, abstract journals or information services; uses of personal communication; habits related to use of bibliographic citations and footnotes; reactions to microfilm and other new forms of information presentation; cliques and "invisible colleges" revealed through use of clusters of journals. A study recently launched at Western Reserve University, studies the psychological factors involved in scientists' judgments of whether a document is relevant to their needs.[24]

Techniques used in these studies include; questionnaires, mailed or administered, ranging from simple to very elaborate and subtle; personal interviews; diaries or records kept by the user; analysis of citations and footnotes within documents; objective observation of use of existing services; and many others.

Each technique has its areas of usefulness and many could be applied to various information problems in adult education. Nonetheless, given the task before us and the time and resources available to us, we soon judge that our time would be better spent developing one or two experimental services into which we would incorporate various means of studying the reactions of our potential users. This judgement was based on observation of the limitations inherent in any of the formal user study methods we might have used. It is an unhappy fact, demonstrated by many user studies, that relatively little can be learned by asking either scientists and scholars or practicioners what they need or how their information services could be improved. They are hampered in this assessment by their habits and traditional training, their prejudices in favor of certain sources and services, and, most of all, by their lack of awareness of new and alternative ways of obtaining information.

That these various limitations are present amongst our adult education colleagues was made apparent in a series of thirty to sixty minute personal interviews we set up with educators calculated to be in either key or typical positions in the field. We learned much about the organization and communication channels in some parts of the field with which we were not then as familiar as we must be, but we soon judged the interviews, interesting as they were, to be simply not worth the time, unless viewed as a public relations device.

We did not conclude that the habits, viewpoints and preferences of the adult educator are irrelevant to the development of improved information services. In fact, they set the conditions within which any improvement must take place. It is a sobering fact, again demonstrated in many studies, that elaborate and expensive information services are often not used by the persons they were intended to benefit. Improvement must be a long-range process of interaction between the information service and the user, in which services are tuned ever closer to the users' needs and in which the users learn to exploit the services, including new activities, more effectively.

D. Potential Audiences.

Long-range planning of adult education information services must proceed largely on the basis of developing types of services which seem to have been most useful in more mature professional fields with similar problems, and by adaptation of new information handling techniques as they demonstrate their effectiveness. While particular services must be given priority, the entire range of needs must be held in mind. Throughout the various wings and sub-divisions of the field similar types of workers with similar types of information needs recur. These may be roughly classified in the following categories of persons who have a need to know about adult education.

1. Teachers and leaders of adults.

These are large in number, including many leaders, extension agents, or other change agents whose "teaching" is a process quite different from that of the traditional classroom teachers. They are usually part-time workers, for the most part untrained in teaching adults, and seldom permanent in the field. It is likely, in fact, that more of this daily work is done by unpaid volunteers in the Cooperative Extension Service, in community development programs, and in hundreds of voluntary agencies, than is done by those who are employed and paid specifically for this purpose. Each professional adult educator, Cyril Houle has observed, should be mustering at least ten of these volunteers to extend his services and the more the field is professionalized, the larger this group will grow. These workers need specific and practical information on teaching adults, motivating them to study and stay in the programs. They are impatient, even suspicious and hostile, with esoteric research. Their needs are legitimate and must be met. Much of the redundancy in the literature is explained by the incessant need to train and orient these ever changing groups of key workers.

2. Program planners and administrators.

In all agencies these programs planners, whatever they may be called, are at work developing the schedule of classes or meetings for the coming year, recruiting the participants, lining up the teachers, scheduling the work, preparing the budgets, and so forth. In many agencies these are full-time employees, but they are seldom trained specifically for adult education and the turn-over is high. They are interested in techniques of recruiting students and teachers, in descriptions of program subjects and formats which have been successful, in registration procedures and many other practical matters.

3. Agency administrators.

At this level we find the directors of public school adult education, the deans of evening colleges and extension divisions, the educational directors or religious denominations, the training directors in business and industry. Most of these are full-time workers, though they may have other duties; relatively few are trained as adult educators, though most of the adult education graduates are working in these positions. Their average tenure in the job is short, though many have long term committments to the work. These administrators need much of the same information required by the workers they supervise, but in different forms. They are likely to be concerned with long-range program development and financing, and with the training and evaluation of teachers. Many are keen students of social trends and needs, especially in their own communities. Some give priority to the philosophy and development of adult education as a movement, but most are necessarily quite relentlessly practical.

4. Staff of supporting agencies.

At the state and federal level, increasing numbers of officials devote their efforts to assisting and facilitating the work of adult education. Another such group is emerging as staff members of many state, regional and national associations in the field. Many of these are professionally trained in adult education, or have long-term involvement with the field. They are concerned with overviews of the directions in their fields, with the development of long-range committment or support and with the interaction of adult education with manpower needs of their states or regions.

5. Researchers and scholars.

A small, but rapidly growing and critically important group are devoting their careers to advancement of knowledge, to the teaching and training of adult educators, and to the history and philosophy of the field. Researchers in other parts of education and in the social sciences show an increasing interest in adult education research.

6. Policy makers.

A key group of potential information users are the legislators at the local, state or federal level, boards of education, trustees of universities, presidents, boards and stockholders of large companies and others who make administrative or policy decisions profoundly affecting adult education. Their concern is with analysis of social needs, with statistical analysis of trends and cost projections and other information to aid decision making.

7. General public.

The general public has a practical need to know more about adult education. Typical questions might be the following ones. Where can I find the particular course or program suited to my need? Where can I obtain counseling and guidance in examining my educational needs? Where can I obtain materials to help with my independent study and how can I be sure that they are any good? In addition, the American public shares many of the information needs of the policy making group, for they must back up and support assignment of national resources on the basis of understanding of the potential benefits of adult education and training programs to the national welfare.

E. Conditions for the Improvement of Information Services.

The nature of the adult education field, its size and diversity, its explosive growth in so many agencies, its emergence as a professional and academic field, and many other factors, set the context in which any long-range planning for information services must go forward.

It is immediately apparent, for example, that no single service could possibly provide all that is needed by so many different kinds of potential users in so large a field. Every agency in the field must develop its own information services, those which are most appropriate for its particular purposes and constituency.

Only some parts of the system can most efficiently and economically be developed by a national information center.

Over a period of years, any services planned for adult education must assume a large scale operation, a large volume of documents and a large number of potential users. This at once has implications for selecting the methods to be used, and clearly dictates planning for the use of computers and other mechanization devices.

The diversity of sponsoring agencies, their relative isolation from each other, and the fact that some of them are entirely outside the formal educational system, implies many problems in acquisition, analysis and the development of services. The common core of knowledge and method which unifies adult education lies hidden behind the differing purposes, audiences served, subjects studied and separate traditions of the various wings of the field. The press to tailor services ever more closely to the particular needs in each part of the field will constantly be in conflict with the need to build the core of common interests.

Expensive long-range development of services must take into account the hard-pressed financial conditions in adult education, where many programs must compete for funds with activities which are often more central to the purposes of their host agencies. The associations serving the field are many and, for the most part, themselves just coming to the point of financial viability in which they can employ permanent staff to provide the most essential service. It will be some time before the Adult Education Association or the other members of the Committee of Adult Education Associations could support the costs of setting up or maintaining large information services, however much they would like to do so. Planning must proceed, therefore, with utmost economy, in anticipation of some measure of self support and in hope of federal subsidy of some essential services.

The number of workers involved in the field, the proportion of part-time and voluntary workers and their turn-over rates affect information needs and forms of publication. An adult education information service must cast a wide acquisition net to capture documents in many ephemeral forms from a wide range of sources. It cannot tune its selection policies to rigid requirements for research design or other marks of "quality," lest it cut off some of the more immediately useful documents. On the other hand, it cannot indiscriminately accept all that flows into the net, lest it be swamped with trifling and repetitious material not worth the cost of processing.

The continuing dependence of the field on knowledge and insight from many other professions and academic disciplines, produces dilemmas in acquisition policies and leads to planning for coverage of these areas through research reviews and other secondary sources. Furthermore, any adult education information service clearly must be brought into interaction with similar services in other parts of education and in the social sciences generally.

Study and consideration of these and many other factors led the project staff in Phase One to conclude that two types of service should be developed, aimed at the profession as a whole. These would be, first, of current publications, with annotations or abstracts, published in broad subject categories. This service, we felt, could be quickly and inexpensively developed and would be immediately useful to a large number of practitioners in the field. Second, we planned for the more deliberate development of a computer-aided information retrieval system based on depth indexing of those documents judged to contribute to the core of tested knowledge underlying improved practice of adult education. This second service would be most useful to a smaller group of key users, the professors of adult education and their students, the active researchers of the National Seminar on Adult Education Research, and others concerned with research and scholarship in adult education.

The activities in acquisition, document analysis, and the development of experimental services described in the following three sections of this report were aimed directly at these two purposes.

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ANALYZING INFORMATION NEEDS IN AN EMERGENT PROFESSION

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SECTION II

DOCUMENT ACQUISITION POLICIES

Our purposes in document acquisition throughout the twenty-nine months of the project reported here were:

- to develop procedures to bring the widest possible range of relevant adult education literature under our scrutiny, in order to assess the bulk of material work handling and the problems of analysis and processing it would present in planning a regular published listing with annotations or abstracts;

- to acquire a manageable core collection of significant research documents for testing the feasibility of an information retrieval service based on thorough and consistent indexing;

- to develop acquisition policies which might be recommended for an operational system and which could be made visible in a meaningful way to the potential users.

Library of Continuing Education.

The Library of Continuing Education at Syracuse University had been building its collections of adult education literature for many years, when the project began its work, which has been based throughout on the collections of this Library. The collections numbered four hundred thousand items, largely pamphlets, mimeographed reports and other ephemeral materials. The standard books and periodicals came routinely into the Library which also contained many tape recordings, films, pictures, and archival files of great importance. It had received gift collections from the Fund for Adult Education, the Center for the Study of Liberal Education for Adults and other associations, as well as from many individuals.

The materials had been cataloged in a very abbreviated traditional style, using a rudimentary classification scheme especially devised for adult education for a shelving arrangement. The librarian had a vigorous acquisition program long in operation and was thoroughly familiar with a wide range of sources. The Library was known throughout the field and recognized as a potential source of help in the profession.

A. Acquisition Sources and Procedures.

In Phase One of the project, an intense effort was made to open new acquisition sources in various parts of the field known to be less well represented in the collection than its traditional areas of subject concentration. These sources included, for example, the educational departments of church denominations, industrial training, the research conducted under military sponsorship, and many others. Contact was made largely by personal communications to the professional agencies involved, followed up by solicitation letters to the additional sources they identified. Valuable use was made of advisors knowledgeable of the agencies producing useful material. Meanwhile, collection continued and was intensified in university adult education and other fields already strong in the collection. Numerous foreign sources routinely forwarded material on an exchange basis; these arrangements were extended.

The second major acquisition procedure was the traditional "burrowing" technique: that is, scanning a wide array of books, periodicals, newsletters, abstract services and other sources for the ordering of material. We have found no substitute for this way of searching out relevant documents and, since adult education is scattered through so many subject areas, we have had to search routinely a large array of bibliographic tools. A further problem is that there is no comprehensive abstracting service covering education, as Psychological Abstracts covers its field, for example. We constantly order titles from unannotated bibliographies, only to find that the documents are not in fact pertinent; alternatively, we know we must miss promising documents buried as parts of larger publications whose titles are not adequately indicative. Experience, judgment and persistence are the qualities required for this work.

In Phase Three of the project, centralized acquisition through the network of the Educational Resources Information Center (ERIC) of the U.S. Office of Education began to affect acquisition dramatically. On the one hand, since ERIC actually sells documents through the ERIC Document Reproduction Service, we were involved in problems related to securing copyright release and duplicate copies of many references. On the other hand, acquisitions were powerfully reinforced by documents collected by the ERIC Clearinghouses as they came into operation in various parts of education, and by arrangements through Central ERIC to acquire reports en masse from federal agencies, state departments of education, the American Textbook Publishers' Institute and other sources. In this period, perhaps 10% of our acquisitions were coming to us from these sources, entirely without cost, often with abstracts and microfiche copies, and including important material we could not otherwise have obtained by any means. The potential benefits of this centralized acquisition directly from major document producers can hardly be overestimated.

Analysis of a small sample of acquisitions in July, 1966 (see Appendix 5) was based on a sample of cards from the catalog and, therefore, describes documents that were selected for processing after subject and quality screening. Roughly 75% were published and copyrighted, confirming our opinion that most writing of consequence, even in adult education, does find some place for publication. About 80% was recent in date, roughly from the past five years, this being in part a deliberate effort to concentrate on current publication. About 20% was foreign in origin, but in the English language, indicating the volume of useful publications from outside the U.S. and reflecting the thoroughness of our coverage in Great Britain, Canada and India where exchange arrangements are well developed. Only about 20% was commercial publication. A further 15% came from adult education organizations, about 20% from NEA and other general educational associations, and about 15% from federal government agencies. The rest came from subject matter journals, international agencies, universities and other sources.

B. Subject Scope and Coverage.

Throughout the project attention was devoted to developing a clear view of the subject scope to be covered. Since adult education derives from and depends on many other disciplines, hardly anything can be excluded as not potentially of some interest or use to someone in the field.

There are many professionals, including leaders of the field, who insist that it would be more useful for us to collect and disseminate significant documents on general social trends, than to handle the "so-called" professional literature of adult education. Adult education will develop and become truly professional, they argue, as it grows more deeply and directly engaged with the major social movements of American society. Machiavelli should be basic reading in adult education courses, one leading professor insists. With some of the views lying behind these assertions the project staff is in agreement.

These views must be qualified, however. It is not feasible, or even possible, to cover all the areas of life (social needs, adult development, uses of mass media, etc.) from which knowledge useful in adult education is, in fact, derived. Adult educators must learn to use a variety of information sources. In order to fit adult education information services into proper perspective in larger information networks which are emerging in ERIC and elsewhere, we must take responsibility for that part clearly identified with adult education, since our access to these other areas will largely depend in the future on the growth of these wider services. Many thousands of workers do, in fact, need quite practical, simple and seemingly mundane material and cannot spend their time on anything else; this is a natural function of the state of development of the field and should cause no concern or embarrassment whatever to those who are themselves more sophisticated and advanced.

The "scope note" in Appendix 2 is an effort to specify in a general, brief statement what is being acquired. Paragraph one indicates the general intellectual content of the collection, while paragraph two enumerates examples of the agencies from which many of the documents emanate and to which they should be useful. Such a statement can never be a guide to action in collecting documents until it has been made operational through hundreds of specific decisions and interpretations over a period of time.

Appendix 3 shows an effort to develop a series of rough "maps" of the field when viewed from different vantage points. For example, when we say that we cover the educational processes important in adult education, a brief outline of these makes the content of this area somewhat clearer to ourselves and to our potential users. Similarly, such maps can be developed to outline the teaching methods, learning-related characteristics of adults, the sponsoring agencies and other areas of coverage.

Even this device is inadequate either for guiding daily decision making or for making the areas of coverage clearly manifest to the user. The technical memorandum in Appendix 4 is one example of many internal memos which were used to explore the specific decisions required to build a collection which would be flexible enough to capture the growing edges of the field, yet firm enough to provide more than a random assortment of miscellaneous documents.

The typical problems are seen in this memo. Shall we cover graduate education because an ever-increasing amount of it involves part-time adults? Or, do we exclude it because it does not usually incorporate the fact of adulthood into its educational planning and methods? Shall we cover all documents exploring the occupational, psychological and social-role problems of women, because they have a bearing on educational problems? Or, must we limit coverage to those studies explicitly relating these factors to education? Since much is learned from the mass media and some adult education uses some mass media techniques, are we to cover studies of learning, opinion, attitude and behavior change credited to these media? Or must this area be excluded because it would quickly double the collection and because most adult educators do not, in fact, have access to newspapers, radio stations, etc. as practical tools in their educational work? Or, should this area be covered in a secondary way by obtaining bibliographies, research reviews, state-of-the-art studies and by building an information file of information sources in that field?

The necessity of such, often painful, decision making makes developing productive collecting policies into a complex art involving many trade-offs between such factors as stated purpose, intended audience, the availability of communication channels to and from parts of the field, the amount of available time and resources, the nature of the information staff, and many others. We have found that our adult education colleagues, when they understand some of these factors and are convinced that the information staff is giving them responsible attention, will accept reasonable decisions on scope and coverage, even where they may personally differ on particular decisions or areas of emphasis.

After a reasonable period of development, a detailed statement of scope and coverage must be provided for examination and discussion in order that the users may understand reasonably well what can and what cannot be expected from the information service. In the end, the products of the service will themselves be the best means of making manifest the content of the system. It was for this purpose that we contrived two issues of the experimental Continuing Education Abstracts deliberately to illustrate the variety of subjects and document types we intended to cover, in order that we might study user comments and reactions.

C. Quality Control.

Similar problems, needless to say, arise in any effort to screen documents on the basis of their supposed "quality" or potential usefulness to the adult educator. Little guidance, for example, can be derived from the notion of "literary warranty," the knowledge that before an article is accepted for publication it has been scrutinized by the author's peers who serve as advisory editors or manuscript readers, for this is not often the case with many adult education publications. In a system being designed to serve a heterogeneous array of practicing adult educators as well as researchers and scholars, what "quality" means must always be related to the intended purpose and audience of the document being assessed. Furthermore, we are still dependent in adult education on many studies and other types of reporting which necessarily leave much to be desired in their precision and comprehensiveness. Finally, the whole matter of assessing what is useful in various real-life situations is murky, at best, requiring more empirical study of how people actually use graphic records.

We have attempted to develop some common sense guidelines, illustrated by the memo in Appendix 6, to help us in screening out documents which are simply repetitious of material already better handled elsewhere, some where the methods used are patently inadequate to support conclusions, and others which seem to us not worth the cost of analysis and processing. Thus, we screen out perhaps one-third of the material coming to us and handle some items at less depth than others. Once the possible usefulness of a document has been established in our minds, however, we do not further "evaluate" its content, but seek rather to describe it precisely. In research reviews and other derived information analysis publications, we will, in those areas where we are subject experts, certainly make such evaluations. Recognizing that we are not expert in every area, we have often called on advisors from the field to assist our judgment and we will often call on them in the preparation of research reviews or other state-of-the-art studies.

D. Staff, Costs and Problems.

Throughout the project period, the task of acquisition has fallen largely to one professional person, who also assists in the subject and quality screening. She is assisted by an order clerk and part of the order procedures are handled by the Syracuse University Library. Cooperation from individuals and agencies has been excellent. We have abandoned mass mailings as an acquisition device and, in various other ways, feel we have sharpened up other procedures. About one-third of our acquisitions come to us free, unsolicited, or on standing orders reflecting contacts made in the past. In a sample month of 1967, roughly 360 separate documents were acquired, of which about one-third were judged suitable for handling by ERIC procedures and another third were handled by routine filing or light analysis. The cost of buying documents, on the basis of a very rough estimate, comes to 55 cents each and the total cost of acquiring materials has never exceeded $2500 per year. Some 150 journals and about 100 newsletters are regularly scanned. The most important of these are listed in Appendix 7.

During the project period, we did not attempt to collect curriculum materials systematically, though samples which come to us have been retained and analysed. This is an extremely important area of information need, on which we have ideas for handling, but have elected to defer any active work at this time.

Significant older material has been incorporated when judged still useful by subject experts. Foreign language documents have been collected and handled as translation of title was available or stored for future handling. The lack of translation facilities is an obvious problem.

Selection and screening have been done by those staff members who are subject experts in adult education, with their initial judgment subject to confirmation by the literature analysts who abstract and index the material. During the period about 2500 documents were added to the collection and their document representation (citation, subject headings and index terms and abstracts where appropriate) are available in machine-readable form.

A special "test collection" of research studies on the conditions of adult learning and evaluation of adult learning methods was developed for experimentation in abstracting, depth indexing, and for the development of retrieval techniques. These 500 documents were the most useful on the subjects covered and were carefully screened for validity and usefulness. They constitute a core collection of the most significant research studies in adult education. They were abstracted and indexed during the project and constitute a valuable information source. The high proportion of these documents which came from the psychological literature and from other disciplines is a further illustration of the extent to which adult education depends on these other disciplines.

We anticipate a continued explosion of adult education literature, caused by the rapid growth of the field as a whole, especially by its penetration into areas not now covered and by the expansion of the cadre of professionally trained persons. Research and publication will grow sharply as federally-supported programs increase. While the amount of publication labelled "adult education" will grow, so will relevant publication in adjacent disciplines where adult education and its problems are of ever greater interest and significance.

In addition, the work of an information center must necessarily grow, because the interaction between a productive center and its users generates a better flow of documents to the center. Nonetheless, we see that the material to be handled for the foreseeable future will be manageable, perhaps not drastically above the rate of the 100 a month now being analyzed.

We expect the nature of the literature to change as well and as a result of many of the same forces. The number of carefully designed research studies is unmistakeably increasing as the profession matures and as government-funded research increases. Lawrence Allen has made an interesting study[1] demonstrating that the progression one would expect in a maturing discipline from inspiration, exhortation and description to research, objectivity, and technical vocabulary, has been gradually taking place and can be shown through content analysis of adult education periodicals.

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SECTION II

DOCUMENT ACQUISITION POLICIES

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SECTION III

LITERATURE ANALYSIS

This section of the Report describes our investigation of various approaches to literature analysis, and the specific methods of document description that we developed to support two types of services. These services, the foundation of an adult education information system, were a comprehensive listing and description of documents for a current awareness service, and an organized collection of documents for an information retrieval system.

As stated in the Introduction, the project proceeded in fairly clearly defined phases. The groundwork of investigation was laid in Phase One; Phase Two consisted of the development and testing of some methods of document analysis. The emergence of the ERIC network early in Phase Two and our negotiations with them in Phase Three had a significant effect on our methods of investigation. ERIC committed itself early to a coordinate indexing system and a specific type of document representation (that is, a document's citation, index terms and abstract). It was clear, in the middle of Phase Two, that our investigation of literature analysis would be most useful if it were directed to problems within the constraints already imposed on the ERIC network.

For these reasons, we do not specify in much detail in this section those parts of our study unrelated to the ERIC system. We rather concentrate on the critical problems of document representation that are as yet not fully resolved in any of the social sciences. We have included in the Appendices, however, a number of reports and memoranda which elaborate on some of the areas and problems of our study.

This section discusses the problems of document analysis in seven subsections.

A. Objectives and Guidelines
B. Bibliographic Citations
C. Subject Analysis
D. Procedures of Indexing
E. Procedures of Abstracting
F. Quality Control and Staff Training
G. Conclusions

A. Objectives and Guidelines

The cornerstone of any document handling system is, of course, an adequate and consistent description of the document in hand, its bibliographic characteristics and its subject content. The major purpose of this aspect of our work was to design and test the effectiveness of systematic document representation. The purpose was implemented through three operational objectives, briefly stated here:

- To establish principles and methods of systematic bibliographic description of documents so that quality of input would remain constant;

- To design tools to analyze systematically the subject content of documents so that user queries could be matched to relevant documents;

- To test the feasibility of mechanized procedures for the analysis, storage, and retrieval of documents or their representations.

To implement these operational objectives, we established certain criteria or guidelines upon which our investigations were based. These guidelines included the following:

- The principles of document description and organization should be flexible enough to encompass a system with both a national archive and storehouse of documents, and a machine-based retrieval system providing depth access to document content;

- In so far as possible, nationally accepted standards of document representation should be incorporated into the system;

- The methods of subject analysis should be inclusive and flexible enough to allow for access to and retrieval of subject information at both high and specific levels of generality.

B. Bibliographic Citations

Early investigation and experience indicated that precise and formalized bibliographic citations would be required in a system designed to handle a rapidly growing literature of varied formats. We recognized also that a mechanized information system required clearly defined units of input to operate efficiently and effectively.

The literature of adult education, unlike much of the physical sciences, had a fairly small proportion of research, knowledge codified in books, or technical reports. Unlike more mature professions, adult education had existed largely through informal organizational forms, personal communication, and the application of learnings from other fields to its own unique problems. Although adult education was rapidly becoming a significant force in American education, involved in the dynamics of social change, its literature, in 1964, was still in large part a disparate array of theoretical and practical ephemera. The research and other disciplined writing, now rapidly on the increase, was then just visible. While practice in the field greatly outstripped its records, the descriptions, analyses and evaluations of the practice are now making important contributions to the literature.

These factors influenced our investigation of the state of the art of bibliographic data recording. Most of the accepted standards of cataloging were designed for published monographs and serial literature. These standards include the American Library Association and the Library of Congress codes, and, for technical report literature, the Committee on Scientific and Technical Information (COSATI) standard. The project staff were experienced already in the art of ad hoc rule-making for our field, but recognized that an information system, particularly one based on machine processing, required simple, specific and consistent rules for structuring input.

We had decided to create machine readable document representations through the use of a paper-tape typewriter (the Friden Flexowriter). Section IV of this Report describes in detail the design and programming of our input records. The decision to acquire the Flexowriter made mandatory certain guidelines as we developed bibliographic description rules:

. clear, simple and specific rules for specifying bibliographic data;

. identification of the necessary elements of the bibliographic record;

. provision of a complete bibliographic description, so that many uses of the data, some then unforseen, would be possible.

An extensive review of a number of cataloging and bibliographic citation rules was undertaken in order to derive a body of clear and simple rules for our use. In particular we examined ALA Cataloging Rules for Author and Title Entries, LC Rules for Descriptive Cataloging, and the COSATI Standard for Descriptive Cataloging. From long experience with adult education literature and with traditional library practice, the project staff were well aware of both the complex intellectual processes involved in cataloging of documents and the inadequacy of the standards for handling efficiently varied types of documents. The review was directed primarily to identifying those accepted standards of procedure that were functional, and in specifying additional rules which the peculiarities of adult education literature or the demands of the system under development required.

As indicated earlier, none of these standards provided sufficient specific guidance for our purposes. The intricate rules for corporate author in the ALA code, for example, left far too much to the judgment of the cataloger, and necessitated a far too complex main entry for machine access to author data. On the other hand, many elements of the record to which we might want direct access, such as language of document, were lumped by these rules in a dump field called Notes.

We decided to compile our own Rules, drawing as much from accepted practice as we could. The work of Buckland in analyzing the Library of Congress bibliographic record[1] and the experience of the Air Force (Cambridge) Research Laboratories[2] in producing machine readable records reinforced our view that mechanized systems required a rigor in analyzing the nature and purposes of bibliographic data elements in a document representation.

The final draft of our Rules for Bibliographic Citation, together with supplements of format specifications for the transcription of data, are attached to this Report as Appendix 7. The Rules and Supplements were never codified in a final form, since the ERIC network, into which the LCE was merged, had already adopted the COSATI Standard for bibliographic citation.

The procedures we designed and tested for translating bibliographic data into machine readable form is discussed in Section IV of the Report. The project staff designed a Document (cataloging) Worksheet (Appendix 9) to enable catalogers to capture the bibliographic data of documents as specified in the Rules. The Worksheet provided a separate field for each data element that we judged should be separately coded for machine manipulation. A total of 30 fields were identified, 25 of which were for bibliographic descriptions. One field was for the abstract; the remaining four fields were complex, with sub-field delimiters allowing for separate manipulation of each part of the data contained in them. One field allowed for four subject headings; one for seven added entry headings. The remaining two fields were devoted to major and minor index terms, of which more will be said in the following subsection on Indexing. Appendix 46 is a sample page of our first experimental output, containing document representations as they are printed out from machine readable input.

C. Subject Analysis

A great deal of study and experimentation was devoted in the project to the intellectual and practical problems of analyzing the subject content of adult education documents.

As has been indicated, the literature reflects the field's interdisciplinary nature, with applications from the disciplines of sociology, psychology, and anthropology being marked and significant. Like certain other social science fields, for example social work, adult education is only now beginning to isolate, define and codify the unique concepts and processes that distinguish it as a profession, with a unique body of knowledge pertaining to its practice. The Commission of Professors of Adult Education has been working for over ten years, defining the area of graduate work in the field and identifying a systematic theoretical base for its study, teaching and practice.

A classic study by Coolie Verner[3], prepared for the Commission of Professors, represents a pioneering attempt to develop a systematic classification of the basic theoretical constructs that distinguish the discipline of adult education. This analysis was extremely useful to us as we attempted to conceptualize the activity of categorizing information.

The relative dearth of taxonomies of the unique concepts and processes is reflected, of course, both in the multidisciplinary nature of the literature and in the myriad institutions and agencies sponsoring adult education in this country.

In handling documents and information in the past, the handful of libraries or agencies around the world specializing in adult education materials, adopted or adapted traditional tools for storing documents and for providing access to them. University libraries with significant collections of adult education materials, such as Teachers College, Columbia University, and the University of Chicago, either used inadequate home-made schemes or dumped materials under broad classes in general library classifications. Subject access to these materials was greatly impeded by such practices.

Against this background, the project staff faced a basic decision: whether to improve the inadequate special or adapted classification schemes, or to take a new approach to the control of subject content of documents. Although the contract awarded to Syracuse University specified the development of a classification scheme, we recognized early the significant shift in the information retrieval field away from traditional or hierarchic classification development for the analysis of subject content of the literature, towards depth indexing systems. In addition, we saw that any system designed to provide access to, and retrieval of, concepts within a document rather than the topic or subject of a document, could be a classification itself. Such a system could meet users' needs at a far greater depth and specificity than had been possible in the past with traditional classification.

We were interested, however, in classification as a device for providing a general level of subject access, used in conjunction with other methods. More is said about this in the subsection on classification.

We now outline the particular methods we studied and the procedures we used to test their effectiveness. Because of our merger with the ERIC network and the premature termination of our grant, this part of our study was not completed. We hope, however, that the design of our investigation may be helpful to both ERIC and other information systems. Since the intellectual problems of subject analysis in education are not yet solved, a small comparative study of the kind we planned remains to be done. It would be entirely feasible and would yield useful data about information transfer in document-based systems.

The methods of subject analysis studied included the provision of access to subjects at a high level of generality through classification schemes and traditional precoordinated subject headings; and access to specific concepts within documents through uniterm indexing, structured vocabulary lists for postcoordination and facet (chain) indexes of terms. Methods of computer searching of natural text, in this case using abstracts of documents, were examined but not studied at any length.

At the beginning of the project's second phase, we decided that the most promising approaches to use and test, comparatively and in combination, were classifications, subject headings, and postcoordinate indexing with a controlled word list or thesaurus. We planned some small experiments in natural text (abstract) searching, also. Before we explain our plan for testing these methods, we discuss each method briefly.

1. Classification.

From the beginning the project staff considered that the concept of "documentary classification," to use D.J. Foskett's phrase, embraced any system of grouping concepts by one or more organizing principles. Any structured thesaurus of indexing descriptors is in fact a classification scheme. The choice for us, however, was whether to use an existing scheme, devise a new one based on our knowledge of the field, or allow a "classification" to emerge from the concepts of the literature itself as they could be derived by indexing. Our study of classification was directed to resolving this problem.

a. Hierarchical Schemes. The 400,000 documents in the Library of Continuing Education were arranged on the shelves according to a classification scheme devised by Roger DeCrow for a "working collection" at the Center for the Study of Liberal Education for Adults. A simplified version of the scheme is attached to this report (Appendix 10). While the scheme functioned reasonably well as a shelving arrangment, it did not provide a useful method of analyzing in depth the contents of documents. We decided that it was not a suitable instrument for further expansion or development.

We examined the adaptation of the Universal Decimal Classification developed by Diana J. Ironside for the National Research Library of the Canadian Association for Adult Education (Appendix 11). While we were most interested in the various experiments using the UDC as an indexing language, we decided that this expansion of UDC, which remained an essentially hierarchical scheme, was not suitable to use in a test.

Both of these schemes had adopted a mixture of organizing principles for categorizing the literature, including categories by type of sponsoring agency, methods of instruction, and the curriculum of adult study. These various facets were not discrete enough to be used with flexibility, either as "slots" for documents on shelves or as multiple "index terms." The UDC, expanded as it was primarily for a classified subject catalog, had the flexibility of auxiliary and relational symbols, but depended heavily on the colon (:) relationship to classify unique concepts of adult education, a serious disadvantage.

b. Faceted Schemes. We then undertook an examination of facet analysis and several faceted schemes. The work of the British Classification Research Group led us to Barbara Kyle's faceted schemes in the social sciences.[4] Appendix 12 is a staff memo commenting on the Kyle Classification. At this time, the Center for Documentation and Communication Research at Western Reserve University was studying the possibility of structuring its thesaurus of educational terms,[5] produced for ERIC, by facets. We discussed the problems of facet analysis with the Western Reserve staff and investigated other schemes reported on by Brian Vickery[6] and D. J. Foskett.[7] (See staff memo, Appendix 13.) In particular, we studied the scheme developed by Foskett for the Institute of Education at the University of London.[8]

One faceted classification scheme had already been devised by the National Institute for Adult Education in Great Britain, by Monica Greaves. It is reprinted in Appendix 14 of this Report. We found this scheme to have some serious disadvantages for use in North America. One of them is inevitable perhaps; the difficulty of finding an homogeneous body of literature from which to derive the primary facets of the discipline and to dictate an overall structure that would represent the literature outside Great Britain. As yet in adult education, there does not appear to be enough commonality of theoretical concepts from which to structure a universal scheme. A staff memorandum (Appendix 15) outlines some of our observations about facet analysis and about this particular scheme for our purposes.

Since we believed, after this investigation, retrieval capability at a high level of generality would be aided substantially by a faceted classification scheme, we started to work on such a scheme. The outline of the scheme is found in Appendix 16. We agreed that classification was one method we should test for suitability as a means of access to, and retrieval of, subject information. Since it would not give us the depth of subject control that we needed, however, we decided to use it in conjunction with other methods.

2. Subject Headings.

The chief advantage of precoordinated subject headings, as they are used in subject catalogs in most libraries, is the provision, in natural language, of access to subjects of whole documents, and their relatively low cost to produce.

In the past, the LCE had used an uncontrolled variety and number of subject headings in its subject card catalog, drawn from a wide array of sources. No good list of headings in adult education had ever been developed. Through examination of standard lists of headings, such as Library of Congress, and specialized lists, such as those used in the LCE, Center for the Study of Liberal Education for Adults, and Canadian Association of Adult Education, the project staff compiled its own list of Subject Headings. Sample pages from this list, showing headings, "see" references, form subdivisions and scope notes, are reprinted in Appendix 17. The complete list of headings is on file at the LCE. Because there is confusion about the purposes and distinctions of subject headings and index terms, we specified that any test of subject headings would be as a means of providing general subject categories of documents, in order to supplement the specific indexing capability of a coordinate system. (See staff memo in Appendix 18.) That the relationship between traditional subject headings and indexing thesauri was close and complex was clear from our study of many existing indexing systems and from the more useful literature in the field, for example, that of Brenner and Hines.[9]

3. Coordinate Indexing.

We have already referred to the basic shift in information retrieval towards some form of coordinate indexing. In our investigations in Phase One of the project, we studied and visited many information centers and installations in the sciences and in the social sciences. (Appendix 19 lists some of these centers.) In particular, we studied intensively the system of semantic code indexing used by the Western Reserve University project in educational media[10] and, later, the coordinate indexing system to which Western Reserve shifted while developing a thesaurus of educational terms.[11]

Our study indicated that in order to design a system that would give us control of the concepts in the literature, with the precision and depth we required, we must use an indexing system which would allow for term coordination at the time of search. Further, the system must be structured, so that the imprecise, volatile and rapidly changing vocabulary of adult education (a very soft terminology field) could be controlled sufficiently to provide for consistency and precision in the analysis and retrieval of concepts. We were influenced, of course, by the fact that the ERIC network had already decided to use coordinate indexing and was not interested particularly in the classification features of either the semantic code or of facet analysis.

We decided to develop a body of index terms suited to general and specific levels of subject searching of adult education literature. A description of the procedures we used to derive the terminology and to develop a thesaurus is given in the following subsection on Indexing.

4. Abstracts and Natural Text Searching.

Very little of the literature of adult education had been abstracted, a practice common in the physical sciences. In order to support one of the major services we were designing, a comprehensive listing of current literature production, we decided to develop a body of abstracts. A subsection of this chapter describes how we built this collection of abstracts. One of the uses we planned for the abstracts was to experiment with natural text searching, using methods similar to those developed by Joseph Magnino of IBM, Yorktown Heights.[12] Because of system constraints described in the next section of this Report, we did not implement this plan, although it is incorporated in our Test Design.

5. Test Design.

Early in Phase Two of the project, in autumn 1965, we evaluated the methods of analysis described above, and decided to test a number of them. Up to this point, part of our investigation took the form of actually analyzing documents - cataloging indexing and abstracting them according to constantly evolving procedures. (At the end of the project, we had in machine readable form, approximately 3000 document representations.)

In order to test the effectiveness for subject analysis (and retrieval to a limited extent) of the four methods of analysis, we decided to set up a limited collection of documents on a reasonably discrete subject. We proceeded to select and analyze a collection of approximately 500 documents on the subject of adult learning. The elements, boundaries, and subject content of the Test Collection, are described in Appendices 20 and 21.

We plotted the design of the test to spread over a year, and to proceed in six stages. These are set out below:

Stage One:

- Derive and compile a collection of index terms for a draft thesaurus, by means of free indexing.
- Complete plan for development of a (new) faceted classification scheme.
- Begin analysis of the Test Collection documents.

Stage Two:

- Complete second draft of thesaurus with term hierarchies specified.
- Complete classification scheme.

Stage Three:

- Complete third draft of thesaurus.
- Add notation to classification scheme.

Stage Four:

- Test collection analysis completed.
- Add classification scheme notations as index terms.
- Add classification scheme notations as hierarchic determinants.

Stage Five:

- Searching by index terms postcoordinated.
- Searching by classification codes.
- Searching by index terms plus classification codes.

- Searching by natural text (abstract) computer searching.

Stage Six:

- Evaluation of search results completed.
- Classification scheme finalized.
- Thesaurus finalized.

As mentioned earlier, this design was not implemented beyond Stage Three, due to ERIC's initiation of negotiations toward incorporating LCE into the ERIC network of clearinghouses. It was agreed by the U.S. Office of Education staff and the project staff that further testing and study in this experiment would not be profitable since ERIC had already committed itself to a post-coordinate indexing system, and was at that time engaged in deriving an operational thesaurus of indexing terminology. Discussions with ERIC began in the spring of 1966, although active negotiations were not begun until the autumn of 1966 - the beginning of Phase Three of our project. This third phase was devoted almost exclusively to bringing our procedures into congruence with the ERIC variants, and to evaluating some aspects of our divergent paths. The project did continue to develop its thesaurus, however, since ERIC did not have an operational thesaurus until 1967.

Appendices 22 and 24 describe in general terms the test design and our procedures for analyzing the problem of document and subject analysis.

D. Procedures of Indexing.

Before we began indexing documents, we studied many indexing systems and accounts of thesauri development. Appendix 19 lists some of the installations whose methods and thesauri were helpful to us.

Studies of the literature and consultations with many system operators convinced us that a first major task was to collect the terminology of the field through free indexing of a wide range of document types and subjects. Most of the indexing manuals, to which we looked for guidance,were so related to a particular type of system that the principles were not easily extrapolated to a pilot project in the field of education. We did find the indexing manuals and other materials of the American Petroleum Institute,[13] the Engineer's Joint Council[14] and Battelle Memorial Institute[15] quite useful. The indexing experience of the Western Reserve University project,[16] however, was probably the most valuable, even though that project used the semantic code with relational role indicators, a much more highly structured system than we were designing.

1. Indexing Methods.

We established early some criteria for selection of documents to be indexed. Since free indexing was to be our primary method of deriving vocabulary, we first chose documents from a wide range of subjects; later, we then used the documents in the Test Collection on Adult Learning. Appendix 24 gives the selection criteria and level of handling we specified for these materials.

The depth of indexing was a constant problem. Concepts in adult education literature, unlike the hard sciences, are general and imprecise, expressed in a great variety of words and phrases. The lack of agreement in the field about the meanings of the very phrases "adult education" and "continuing education," for example, is testimony to the ambiguity with which concepts of adult education are perceived in the field. The staff memorandum in Appendix 18 states the problem generally in relation to subject headings and index terms.

We attempted to solve this problem in several ways. We rejected early Brenner's concept of term (or word) indexing,[17] because words in our documents did not mean necessarily what they said! We tried to extend this concept to a level of indexing midway between subject headings and index terms - concept indexing. A staff memo in Appendix 25 explains this idea. We were, in fact, indexing ideas, not the words in which they were expressed. Indexing by this method is classification, of course, and requires indexers quite knowledgeable in the subject.

As a next step, we specified two fields for index terms, major and minor. These two fields together with a field for four subject headings (the latter designed for our subject card catalog) gave us three levels of generality with which to approach units of information, whether whole monographs or journal articles. The problem of when a concept should be tagged by a major or a minor term was a constant challenge - as it is in the ERIC system, which also uses the major/minor distinction. Our intention was that major terms should be those five terms which together best describe the content of the document.

Relationship between terms and their functions as access points was a continuing problem. We considered systems of role indicators and roles and links to be of unproved value for retrieval, and extremely unwieldly and difficult to apply in indexing. We hoped that control of the context of index terms might be achieved by classification codes attached to documents, or by the form of the index terms themselves.

Throughout the project, we indexed from the unit of information itself, not from its abstract. We did compare the adequacy of indexing from whole documents, from abstracts and from extracts, however. Even though many of the abstracts were substantial (300 to 500 words), we found that in almost all cases, more index terms at a more specific level were applied to the whole document than to the abstract. These tests were made before much of our vocabulary was collected and does not prove conclusively that good indexing cannot be done from abstracts.

2. Vocabulary Derivation.

While indexing, we collected terminology to represent concepts in the literature. For many months, the project staff spent two hours of each day in seminar, discussing the terms derived, their levels of specificity, their form, meanings and definitions, the synonymity and other relationships among terms, and semantic and/or conceptual hierarchies. This activity has been continued throughout the project. To increase rapidly the body of terms being derived, we dumped large numbers of terms into our word list. These were found in the text and indexes of important overviews and handbooks of the field, and in dictionaries of occupations, research methodology, measurement instruments and the like. Each literature analyst took three facets into which we had divided the field, and searched tools for vocabulary potentially useful in indexing.

After we had indexed a batch of documents, we would analyze the frequency of term use. (See Appendix 26.) By this means, we could control variant word forms and also identify areas of the field inadequately represented in our indexed collection.

The technique of facet analysis led us to engage in some "term clumping," again a classification activity. By this means we hoped to find a good organizing principle for a thesaurus, as well as test the possibility of deriving a classification scheme from the analysis of the literature. Appendix 27 illustrates a structure for clumping terms and Appendix 28 shows a batch of terminology arranged by one facet or clump. We later pulled together all the concepts we had indexed and arranged them by categories. The outline and sample pages from one facet of this "obverse thesaurus" is found in Appendix 29.

3. Thesaurus.

The question was how best to organize our word list. We had studied many thesauri, such as the Engineers Joint Council Thesaurus[18] and its Rules for Preparing and Updating

Engineering Thesauri,[19] the Subject Authority List of the American Petroleum Institute,[20] and the word list of the Harvard Clearinghouse on Educational Differences.[21] In addition, the Defense Documentation Center Thesaurus[22] and the International Labour Organization List of Descriptors[23] were useful. A facet arrangement attracted us, in particular; the experience of the Western Reserve project in organizing its thesaurus[24] by facets was impressive. The ERIC network, however, had decided to structure its own developing thesaurus on the EJC model, and we decided it would be a mistake to diverge from their example, as we were already discussing our participation in the network. If our thesaurus was to be useful to ERIC, and was to allow us to quickly submit terminology into that system, it should follow the EJC model also. The thesaurus went through three revisions, using unit record equipment for its production. Appendix 30 contains a sample page from the first draft; the final revision is on file with ERIC. A staff memo in Appendix 31 describes its production. Our last supplement to the thesaurus was compiled just prior to our participation in ERIC. (Appendix 32.)

4. User Interaction.

During the development of our word list, we sought cooperation from a small test user group of professors, researchers and practitioners in adult education. The many problems of terminology control (see Appendix 33) are extremely difficult to communicate to non-specialists in information handling. We were already aware of this fact from earlier consultation, and from our own difficulties in analysis. We thought it would be most beneficial, however, if we could test the assumptions on which we were identifying the indexable concepts in the literature. Therefore, we sent our "user group" the first draft of our thesaurus, and asked for their comments. (See Appendix 34.)

The reactions were complex. The high response delighted us, but some of the comments indicated that further initiation into the purposes of coordinate indexing would be needed to make the interaction really useful.

E. Procedures of Abstracting.

The art of abstracting has been discussed at length in information science literature, and there are many good models from which a new system can learn. Early in the project, we decided that abstracting a body of documents should both give us document representations with which to experiment and allow us to disseminate a useful product.

In developing staff expertise in abstracting, and in establishing our procedures, we found particularly useful the abstracting experience of the Western Reserve project.[25] We also investigated the developing abstracting services in social work[26] and in peace research.[27] We decided that, unlike some systems we would combine the tasks of abstracting and indexing, and started literature analysis as soon as staff were hired.

Basic considerations in developing our style of abstract writing, were the length and type of abstract. After experimenting with length varying from 100 to 500 words, we attempted to set a standard of 200 - 250 words per unit of information. Our basic rule was to make the most compact, economic abstract which was a precise, clear and adequate surrogate of the document. If more than 250 words were needed to accomplish this end, we used them.

The type of abstract depended to a large extent on the kind of document being handled. Research and technical reports containing "hard" data, for example, were abstracted generally in "informative" style; discursive essays and handbooks were given descriptive abstracts. We defined these types as follows:

. An informative abstract is a rewriting of the whole document in abbreviated form, preserving its factual information and the author's point of view and emphasis. It is in fact a succinct and accurate precis or summary of the principal purposes, methods, findings and conclusions of the documents.

. A descriptive abstract enumerates the type of document, the subject matter and subdivisions of that subject, its scope in coverage or date, how it is organized, illustrative materials which are included such as tables, bibliographies, examples of questionnaires, and its availability.

After much experience, we developed a set of guidelines and a format, or style manual, for abstractors of our literature. The Guidelines are reprinted in Appendix 35; the style and format specifications are on file at the LCE.

We did not carry through our plan to run some tests of text analysis, for vocabulary development and natural language searching, using abstracts as the data base. Another major purpose of developing a data base of abstracts, however, was to support the two types of services being planned: a comprehensive listing or abstract journal of current literature, and a retrieval system. The output of our machine readable record, the document representation including the abstract, could be used for both an abstract journal and for packages to send to users in response to queries. These uses of the system input are described in Section IV.

The evaluation of our experimental abstract journal, Continuing Education Abstracts (CEA), sent to our small user group, were valuable factors in the revision of abstracting practices.

Tabulations of the feedback appear in Section IV; specific comments on the abstracts in the second issue of Continuing Education Abstracts are in Appendix 51. Sample pages of the two issues of CEA are in Appendices 38 and 46. While the evaluative comments of the user group illustrated an unclear perception of our approach to abstracting (our poor communication, in part), the feedback did enable us to sharpen and refine our rationale for document selection and depth of analysis. The tabulations revealed a 72.8% satisfactory rating of the abstracts and an 81.6% rating for clarity of writing.

F. Quality Control and Staff Training.

It is obvious that the quality of literature analysis depended almost entirely on our system controls for quality production and on the caliber and training of literature analysts (index/abstractors). A great deal of senior staff time was spent in these two tasks.

1. Quality Control.

While control of quality of each aspect of our operation was a function of system analysis, specific controls of the intellectual processes of document analysis were considered part of the task of literature analysis. Reference has been made already to the establishment of screening and processing criteria for input to the system (Appendices 4, 6, and 24). Once documents were in analysis, we experimented with various techniques for maintenance of quality of processing. First we studied in staff seminars, those areas of document analysis which were critically important from a system's or user's point of view, such as consistency of bibliographic data recording and accuracy in indexing and abstracting. Problems not covered by our guidelines were resolved by discussion followed by decisions, the latter being incorporated in our operating manuals.

As the project staff gained sophistication in document analysis, a series of editing procedures was established. First-stage editing of all fields of the document worksheets, was done by the Supervisor. The Director and Associate Director were responsible for final editing, and for the initiation of procedure revisions or the establishment of new policies.

As the experimental system matured, random samples of document representation were scanned regularly by senior staff to ensure consistency of general approach, depth and quality of analysis, and accuracy of data transcription. Proofing procedures, both mechanized and manual, were established for translation of document representations into machine readable form.

Probably the most useful form of quality control, however, was that of the staff themselves. A major function of staff seminars and joint consultations was the staff's criticism of each other's work and of the assumptions and principles on which procedures were based.

2. Staff Training.

One of the most important qualifications for a staff in an operating system in a special field is subject knowledge. Knowledge of the particular analytical procedures of a system may be learned best through on-the-job training. While it would be equally beneficial for staff in an experimental situation to have subject competence, it may be that certain other factors are more significant; for example, intelligence, an analytical and flexible approach, and emotional and mental stamina.

Our literature analysts were not knowledgeable initially in adult education, but were trained and experienced in education itself, in library science or in related disciplines, such as psychology, before we hired them. The lack of subject knowledge was a constraint we had to accept. Because of the staff's ability and personal qualities, however, we were able to develop a team of competent indexer/abstractors that both lived with the ambiguities of an experimental project and produced good quality work.

Although intelligence, stability and a liberal education were proved to be significant qualities for analysts, knowledge of adult education and document analysis techniques had to be learned.

Adult education is an "accessible" discipline in that the literature, outside of a small proportion of research, is easily read and understood by liberally educated persons. This fact made it possible for staff to begin abstracting while still in training. It is probably true to say that abstracting, more than indexing, requires subject knowledge, and we did find a marked improvement in abstracts as staff became familiar with the literature of the field.

The chief means of training were staff seminars, consultations, conference and workshop experiences - all forms of on-the-job training. Training in staff seminars centered around discussion of the techniques of indexing and derivation and structuring of terms. Three of the senior staff were subject experts as well as information specialists, and took the lead in the staff seminars. As the project developed, the Director devoted more of his time to training and supervising abstracting while the Associate Director was primarily concerned with training and supervising the work of literature analysis and indexing.

The work of Jack Mills and Derek Langeridge in developing a training text for indexers,[28] which came to us in draft form in Phase Three of the project, was most useful in training new staff. A training manual, particularly for indexing for a coordinate system such as ERIC, is badly needed, and we await the publication of the Maryland text begun by Mills. Manuals of abstracting and indexing, and some of the literature of the subject also proved to be helpful. Of particular value in training were the indexer's manual developed at Battelle Memorial Institute,[29] the design and evaluation of indexing at Project Sharp, Bureau of Ships[30] and the very interesting work of Cleverdon [31] in the Cranfield research projects.

G. Conclusion.

Phase Two of the project, in which most of the work described in Section III was accomplished, ended in mid-1966. From that point on, the experimental design was redundant with ERIC development, although we continued document analysis itself and refinement of our guidelines for indexing and abstracting. Since we had invested so much thought and time in confronting and resolving many of the intellectual problems of literature analysis, we decided to communicate our results immediately to ERIC.

Phase Three, which lasted until the LCE was awarded a contract as the ERIC Clearinghouse on Adult Education, in June, 1967, was devoted in part to ensuring compatability of procedures. We took first the input form for document representations that ERIC used and compared it field by field with our own. In the report describing this comparison,[32] which we submitted at ERIC's request, we commented on the inadequacies of the resume or worksheet ERIC was then using for handling the nonreport literature of education. We made suggestions on how necessary data elements could be cited, and how elements could be incorporated into a machine readable record.

In addition, we were concerned about the (then) serious weaknesses of the COSATI Standard for Descriptive Cataloging for specifying cataloging data for education. The COSATI Standard has since been revised,[33] and is now more compatable with the new Anglo-American Cataloging Code,[34] although it remains an inadequate tool for our purposes.

Again, we compared our Rules for Bibliographic Citation (Appendix 8) with the ERIC guidelines which were based on COSATI. We submitted a technical memorandum[35] specifying supplementary rules that could guide ERIC clearinghouses in data transcription of nonreport and ephemeral literature so common in education. Many of the proposals that we made for data elements were designed to alleviate the constraints of the computer input routines then used by ERIC. Now that ERIC is designing a new system, LCE is participating in the formulation of more adequate rules and procedures.

LCE has participated also in the development of suitable abstracting and indexing guidelines for ERIC. Our thesaurus has been used by both LCE and ERIC as a guide to incorporating adult education terminology into the ERIC system.

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SECTION IV

MECHANIZATION AND OUTPUT EVALUATION

In previous sections of this report, several project activities were described. These activities were grouped into three chronological phases: Phase One was mostly exploratory and certain decision points were reached based upon these explorations; Phase Two comprised the first experimental implementation of those decisions; in Phase Three, these experimental operations of the LCE were modified in order to join the emerging ERIC network as an operational clearinghouse dealing with the literature of adult education.

The purpose of the present section is to review some of the activities of Phases One and Two not previously discussed; how decisions were reached and implemented, especially decisions which related to overall system design and machine applications to output and information retrieval; and the evaluation of experimental output products. This section is divided into the following parts:

A. System analysis and synthesis procedures;
B. Hardware and system selection;
C. Experimental flow and programming specifications;
D. Experimental output evaluation;
E. Summary of Section IV.

A. System analysis and synthesis procedures.

To design any information system effectively, the potential user group must be somehow identified and described. The diversity of the potential users of a national information system in adult education has already been described in Section I. The information requirements and habits of such a group were difficult enough to pin down; nevertheless, certain user characteristics were known and incorporated into the system design at several points. We knew, for instance that, although potential users of the system were geographically widespread throughout the world, they were usually affiliated with identifiable institutions, such as national, state and local governments, voluntary agencies, commercial firms, associations, and educational institutions. This condition indicated that many cultures, languages, and information channels were involved which could be used for the acquisition of documents, and which should be integrated into a developing system. Furthermore, these channels could themselves serve as "information transducers" through which adult educators as individuals could be served.

One fact was certain: no unified information service existed. The establishment of such a service could begin to bring some unity into diversity in a partially controlled manner, simply by being an information switchboard: a switchboard which could channel packaged information in several forms. Users could easily acquire, digest and incorporate these packets into their several activities. The overall problem became, then, one of packaging appropriate information and disseminating the packages to specified users. Several very specific questions were identified in order to solve this problem: what INFORMATION should be packaged; what FORM should the packages assume; how should they be PRODUCED; which USERS should receive them; how should the packages be EVALUATED; and, how should the system, reacting to evaluation, be MODIFIED easily and quickly?

Finding answers to these questions became the central activity of Phase One, and required further information about the limitations within which system design could take place. These limitations can be called constraints. They were either contractual, institutional, mechanical, intellectual, or temporal. The major categories of constraints were:

Constraint 1: User diversity.

A full-blown user study was economically unfeasible, and would have required more time than the contract allowed. Questionnaires were known to be unreliable and had several other drawbacks; structured interviews would have been very expensive and usually require special training.[1] And we were not at all sure what would be appropriate questions to ask. The most useful alternative was to carry on a series of semi-structured consultations with experts in the adult education field.

Constraint 2: Information data base.

The preliminary data base was defined as the sum of the information contained in documents within the collection of the Library of Continuing Education, plus those documents which were to be added during the contract period. In actual practice, we assumed that only a subset of this large collection would be incorporated into the investigation. Furthermore, representations of documents would have to be developed and serve as the first step in preparing information packages.*

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* The construction of document representations is described in Section III. They were operationally defined as an organized subset of document elements, as well as other information added during document analysis. A traditional 3 x 5 library catalog card fulfills the definition; machine readable representations in any medium as well as document analysis worksheets are also included within it.

Constraint 3: Basic research.

Basic research in information handling was contractually prohibited, which implied that any system equipment, software, and media must be "off the shelf" with only minimal modifications made to them to serve our purposes. This constraint would tend to speed our work and make parts of the resultant model for replication in other similar information handling situations.

Constraint 4: Local equipment and software.

That only after the machine and software capabilities of the Syracuse University Computing Center and the Syracuse University Research Corporation had been adequately exploited, could external system support be investigated.

Constraint 5: Machine readable records.

We imposed a constraint that any machine based system we developed was to produce a variety of output from a single machine readable record. In other words, manual duplication of all or part of a record which had been stored previously in machine readable form should be avoided. This principle was to be a major goal in system design.

With these constraints in mind, we proceeded to explore user information needs and information handling systems simultaneously, since in the preliminary stages of Phase One they could be considered somewhat independently, then merged later as the project matured.

The determination of user information needs had to operate within Constraint 1 as described above. Preliminary delineation of these needs was accomplished through formal correspondence and semi-structured consultations with key adult educators, administrators, researchers, professors, and representatives of several professional associations. Presentations were made to appropriate groups and comments solicited during the reaction sessions which followed them. This activity was exceedingly helpful to us, since we confirmed a strong suspicion that some kind of informative listing of document representations would be a natural and measurable first step. This kind of interaction occurred throughout the contract period.

Information handling systems, on the other hand, were investigated by surveying the copious literature on the subject, and by discussing the capabilities and requirements of such a system with top level personnel in both the Computing Center and the Research Corporation at Syracuse University. Outstanding consultants, both private and corporate, were used at various stages of system development.

These concurrent activities led to several operational decisions.

We elected to construct document analysis worksheets which, along with their associated rules, controlled the recording of document representations in a standardized format. The specific content and procedures relating to worksheets have been described in Section III; Appendix 9 illustrates the final version--one of several employed during machine implementation. This format was developed to produce a standardized machine readable version of the typed representation, which could be used for several purposes, some of which were known, while others could be incorporated as user and staff evaluation indicated.

We wanted first of all to automate some of the steps involved in making a library card catalog. We reasoned that if 3 x 5 cards could be manufactured easily from a single machine readable record, then other access tools, such as book catalogs, abstract journals, accession lists and the like, could be derived from it just as easily. (see Constraint 5, above) Document cataloging had been an integral part of the Library's activity prior to the contract, and it seemed natural to experiment with it as part of the larger problem of information control for the field of adult education. The cards could also be disseminated to other adult education libraries, and serve as our own pro tem access points to the experimental document collection until a more efficient alternative document retrieval system could be devised. Parallel systems, others have warned, should be operated until one proves itself superior to the other. We found this advice wise indeed. We were supported in this rationale by several descriptions of such activity in the library and documentation literature.

The informal analysis of user information needs indicated that the first public (as opposed to in-house) experimental output of the system should be an abstract journal, as indicated above. It should be produced quickly, by whatever technical means available to us, but contain our best intellectual effort. Two issues of an experimental journal were produced during Phase Two of the project (see Appendices 38, 46, for sample pages). Formal user reaction to this product allowed us to modify future output packages before computers were brought into play. Besides, no local or "imported" computer system had yet been found which could serve all of our intended purposes. One system did, however, seem to promise some usefulness to us. It is described in the next section.

B. Hardware and system selection.

Midway through Phase One factors were enumerated to aid in selecting equipment and software to implement the preliminary steps of the system design. These factors constituted a checklist of what to look for in system components; they must be:

- reliable and serviced locally;
- relatively simple to use;

- compatible with other components in the system;

- text-oriented, or at least text-orientable;

- supported by appropriate programming talent;

- reasonably modifiable for special applications, some of which may not have been foreseen;

- conform to input and output specifications.

1. Computer related systems.

Early in the project, we determined what unit record and computer machines were operating on the Syracuse University campus. Since the Computing Center had an IBM 1401/60-7074 system, we naturally tried to find software program packages which would answer our input and output requirements. A promising set of information retrieval programs had been written by Bacon[2,3] at the University of Pittsburgh: the Pittsburgh Executive System for Tapes, Information Retrieval subroutine (PEST-IR). Although it had been originally developed for the computer searching of state legal statutes for precedents, we felt that certain capabilities contained in sub-routines of the system would be very useful to us, even though all of our needs could not be met without radical revision of the programs.

Some of the major capabilities which we could use included: (1) word frequency counting from natural language text input; (2) a modified Boolean searching procedure which allows for the combination of synonym list names; and (3) the ability to print, in several formats, document representations resulting from Boolean queries.

We decided to obtain this package from Pittsburgh, clean it up, and run sample documents through it. We wanted to use the word counting capability to help us derive an indexing vocabulary based upon a set of randomly selected documents. We reasoned that if we could input a truly random selection in full text format we should be able at least to check our intellectual guesses about appropriate indexing terminology against a purely statistical picture of word frequencies in documents. Whole text could not be handled without some programming changes because of storage and sorting constraints, so we wanted to try the next best approach--abstracts. In order to do this as part of a single smoothly operating system, rather than running a separate system for a single purpose, we felt that all of the documents which we intended to put into machine readable form should be run through this PEST system as a continuous evaluative procedure, rather than only occasional batches of document representations. A truly representative sample could not be claimed until a large number of representations had been similarly processed.

Since we had selected punched paper tape as the input medium for reasons other than input to the PEST system, we immediately ran into obstacles. Since PEST was a card-oriented system, it was therefore necessary to write a conversion program to transmute BCD paper tape coding in Hollerith tab card codes. This program was written with great difficulty, since other changes had to be made in the record in order for it to be accepted for PEST processing. In fact, we discovered that the paper tape document representations had to pass through two other machines before it could even be loaded into the IBM 7074. Paper tape had to be transferred to disk by an IBM 1620, then the disk carried to an IBM 1401 which again transferred the data to mag tape. The mag tape was then fed into the PEST system on the IBM 7074. The three machines were in separate buildings; the opportunity for error as well as machine scheduling problems made this route an unreasonable one. New IBM System 360 machines were on order by the Computing Center, with delivery scheduled during Phase III of our contract; PEST would not be usable without major program modifications. We were forced by these conditions to abandon PEST-IR experimentation. This decision is further adumbrated in Appendix 36.

In addition to the elaborate capabilities of the PEST system, which theoretically could have helped us in building indexing vocabularies, document searching, and output, we looked at simpler methods of producing listings of document representations. Foremost among these was the IBM KWIC (Keyword In Context) system. This series of programs could produce an index display of rotated document titles in alphabetical order, and referred the user to the full citations in another part of the publication. Precisely because the technique was based upon titles, it was rejected, since, in the field of adult education, the words in titles of documents are unreliable indicators of document content. This condition is less obvious in the hard sciences and industry for which KWIC was originally designed.

There was, at this point, no alternative but to go ahead and design our own computer-based system, borrowing heavily from the experience of other document-handling installations.

Having learned quite a bit about how not to use computers for our work, we resumed our discussions with the Syracuse University Research Corporation. A new computer configuration, an SDS 930 system, which could read our paper tapes directly had recently been acquired, but no programs existed which could help us. We contracted with them to program our requirements in incremental and modular stages. Several stages had been completed when Phase III considerations forced us to discontinue this effort as well. More specific description of the SDS 930 programming activity is described in Part C of this section.

Other document handling systems investigated are listed in Appendix 19. Although much was learned from them, all were rejected for various reasons. The usual reasons for rejection were incompatibility of equipment, proprietary isolation, time, and local inexperience with their operation. Many were designed for highly specialized applications and would not perform some of the manipulations which we felt necessary.

2. Input machines.

Prior to the programming effort related to the PEST-IR system described above, we decided to lease a Friden Flexowriter Programatic paper-tape typewriter, model SPD, as the input device to whatever computer system might be developed later. We had investigated most comparable machines such as mag tape typewriters (IBM, MDS), other paper-tape machines (Dura, SCM, Autotypist, IBM 1050) and IBM keypunches. The mag tape machines were either not yet released or were computer incompatible; keypunch machines were relatively slow and required quite elaborate peripheral equipment in order to verify, sort, and print; character fonts were limited unless elaborate coding were used and only computer or card-driven composing machines could translate them typographically. Paper-tape machines seemed to be the best choice within our constraints. We had examined other text-oriented computer systems which employed paper tape as the input medium, such as those at Douglas Aircraft[4] and Itek[5]. From their experiences, we felt some confidence in selecting this medium for our purposes. The choice of the Flexowriter was made solely because a local Friden office existed in Syracuse; its technical and programming support proved to be excellent.

The programming and by-products of the Flexowriter are described in Part C below, and flow diagrams and programs appear in Appendices 38 and 39.

3. Unit record equipment.

As described in Section III, a thesaurus of index terms began to be developed relatively early in the contract period. We had hoped to use PEST in this effort, in order to derive terms from document abstracts, then fit them into a standard indexing vocabulary. When such wordlists are compiled, a large number of terms are quickly produced, then taper off as time goes on. Some system of conceptually grouping them must be imposed. This activity is called thesaurus building. Since such a list is not used only by document analysis teams to index documents, but also by searchers when formulating queries for an information retrieval system based upon coordinate indexing, rapid updating of such a list is an operational necessity. As a first step in shortening the turnaround time of producing thesaurus cumulations, we decided to automate this process as much as possible. Initially we intended to use unit record equipment to aid in this task. The coding and work flow specifications and a sample printout are described in detail in Appendices 30 and 31.

As computer programs were developed to handle document representations, we had planned to extract and automatically update the thesaurus from the terms used in worksheet fields 28 and 29 (see Appendix 9). A set of diagnostics would cross-check legal terms and provide a list of new terms which would be candidates for structuring in the next cumulation of the thesaurus. The thesaurus update would be produced by computer. Unfortunately, we were unable to go that far with our plans, but we did use the unit record equipment as a preliminary phase-in and found it satisfactory for the purpose.

4. Optical coincidence searching.

Since we had committed ourselves to testing a combination of coordinate index terms, subject headings, and classification codes as subject access points to the data base collection of document representations, we looked at several relatively inexpensive devices for searching, using each technique. We already were producing and using a traditional 3 x 5 subject card catalog, and documents were arranged on the shelves according to an interim classification scheme. Both the McBee Keydex and Jonkers Termatrex systems seemed likely candidates to test the coordinate indexing approach to retrieval. Presumably, each scheme had theoretical strengths and weaknesses relative to each other which could be tested in competition in both manual and computer systems. Since a test of the three schemes on the computer was still planned to be months away, we wanted to try them out within the constraints of manual systems. We borrowed a J103 Termatrex system, and were discouraged at the technical difficulties in using it. Certainly a test related to retrieval time would not be conclusive, unless a more elaborate version of the optical coincidence technique were available to us. Time prohibited us from thoroughly testing out these three approaches competitively.

In the early stages of the ERIC system, the Termatrex system was considered by the network as a useful retrieval device, and we were already predisposed to use postcoordination of index terms for subject access since our work had carried us precisely in that direction. We began early to plan for its use, since our computer work became redundant with ERIC plans.

The initial selection of these devices, systems and procedures in Phase One was considered interim only. Newer equipment, such as mag tape typewriters, mark-sense readers, and interactive real-time input systems (such as IBM's DATATEXT) were on the verge of practical application. We had investigated all of these machine-based systems as well as the newer more versatile computer print chains, and computer typesetting, when the advent of ERIC brought Phase Two of the contract to a close.

C. Experimental flow and programming specification.

In order to develop a system capable of producing several products from one input keying operation, we proceeded incrementally through several phase-in operations. Throughout the contract, reliance was placed upon the paper-tape punching, reading and variable formatting capabilities of the Flexowriter. Not only was the Flexowriter used to punch computer input paper tapes, but also 3 x 5 cards in several variable formats, and two experimental issues of Continuing Education Abstracts. These two issues were evaluated by selected groups of professional adult educators. These evaluations aided us to revise the content and format of subsequent issues which would have been produced by computer. In essence then, these products were to be phased into computer production and the Flexowriter phased out as a printing device. Had the system matured, the Flexowriter itself would have been ultimately replaced by an interactive device connected directly to the computer system.

Descriptions of pro tem output requirements, and the flow of documents in their various representational forms appear in Appendices 37 and 38. The Flexowriter programs which controlled the production of the products described throughout this Report, are reproduced in Appendix 39.

In addition to Flexowriter processing, two other programming efforts were undertaken. The purposes of these activities have been discussed above in Part B of this section.

Only one programming sequence reached the stage of producing formatted document representations for the third issue of Continuing Education Abstracts. Detailed descriptions of these programs are exhibited in Appendices 40, 41, 42, and 43. A sample page, reproduced for proofing purposes by the SDS 930 computer line printer, appears as Appendix 44. Descriptions of programs, written and debugged, which translated paper tape into the 7074 PEST system are omitted, since no machine manipulations beyond that stage were performed.

A staff memo, programming stages which would have followed the production of Continuing Education Abstracts, Experimental Issue No. 3, is attached as Appendix 45. These stages emphasized the production of several kinds of indexes to the document data base, summary statistical reports of indexing activity, and Boolean searching of several fields of the document record.

It should be emphasized that this programming activity was experimental and was dependent primarily upon evaluation of output products by users. The next section describes some of these evaluative activities.

D. Experimental output evaluation.

Evaluation was a continuous activity carried on during the contract period, and took several forms. Decisions about what the experimental system was to produce had to precede full system design specifications. Then what the system produced had to be evaluated in order to determine how the system design was to be modified.

We deal here with the following three evaluative activities and their effect on subsequent operations:

- Continuing Education Abstracts, Experimental Issue No. 1 (CEA-1);
- Continuing Education Abstracts, Experimental Issue No. 2 (CEA-2);
- In-house operations.

1. CEA, Experimental Issue No. 1.

The two issues of CEA were the first in an experimental series specifically designed for user evaluation of content and format, and for staff evaluation of production techniques. It was important to interrelate both test procedures in order to develop a coherent system of announcing documents. CEA-1 was produced completely by the Flexowriter after a worksheet was designed to standardize input formatting. Designing the worksheet was no simple task, since descriptive cataloging rules had to be developed and indexing and abstracting guidelines prepared and applied. Because of these interdependent variables, we elected to de-emphasize typographical beauty and push a packet of documents through the complete sequence, including gross user feedback and by-product catalog cards, in order to see if it would work. We knew most of the technical problems; what we did not know was the value of the product to users.

A sample page of CEA-1, the opinionnaire which accompanied it, and an evaluative summary appear in Appendices 46, 47, and 48. The evaluation included production cost and time estimates, the chronological spread of documents represented in the issue, mechanical errors and content inadequacies, and recommendations for major improvements to appear in the next issue, CEA-2. Radical Flexowriter reprogramming was indicated, and a new two-column document analysis worksheet was designed and used for the remainder of the contract. (see worksheet in Appendix 9).

2. CEA, Experimental Issue No. 2.

Utilizing as much of the staff experience and user reaction to CEA-1 as possible, we produced CEA-2 by Flexowriter. A new two-column format, photographically reduced 30%, permitted catalog cards and CEA-2 entries to be produced without varying the text widths. This simple format change reduced considerably the frequency of machine and format errors, and produced a better-looking page layout. Dashes between syllables were eliminated. Appendix 38 contains a page layout of CEA-2.

A more ambitious user evaluation procedure was designed which required much more user effort than was previously necessary and centered on the usefulness of the abstracts. Along with special copies of CEA-2, rating instructions were sent to about 120 users. Data was derived and reduced on special forms and is summarized in FIG. 1. The rating instructions and data forms are contained in Appendices 50 and 51.

In addition, the user ratings were tallied for each abstract. A fragment of the tally sheet appears as follows:

TOTAL USER RATINGS ARRANGED BY ABSTRACT NO.

	CATEGORIES FROM CEA ANALYSIS WORKSHEET, APPENDIX 50								
ABSTR. NO.	1	2		A	B		H	N	M
1	44	7		40	1		13	1	29
2	33	15		30	13		17	4	23
3	18	30		20	25		22	8	15
4	26	20		37	7		28	1	24
	44	5			5		38	0	5
							13	13	19

Using these two data reduction techniques, as well as the sampling of user comments displayed in Appendix 51, we were able to develop a number of recommendations for improving document selection, abstracting, indexing, and production techniques. We discovered, for instance, that sufficiency, clarity, and relevancy of document representations varied with the type of user. Adminstrators tended to think that abstracts were sufficient, and moderately relevant; researchers thought abstracts somewhat insufficient, unclear, and relevant only if their current research activities related to them; professors of adult education found the abstracted documents fairly sufficient, too compressed, but mostly relevant. Other groupings appeared and were similarly distributed.

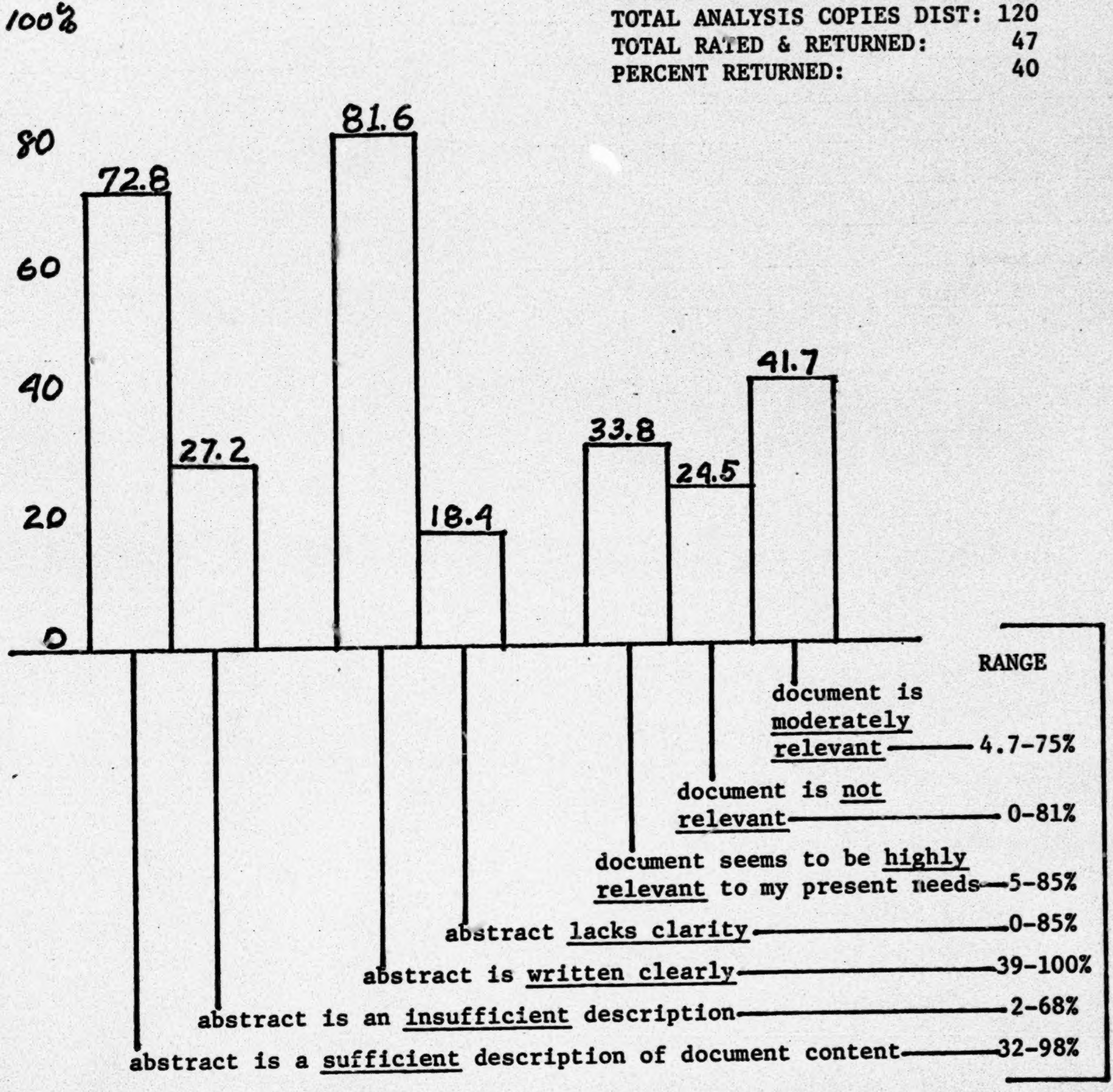
We had begun to acquire some formal user reaction, and much more would be needed from similar reactions to future issues. We planned next to correlate evaluative data with more information about user information-seeking habits. The kinds of questions

CEA-2 EVALUATION

MEAN PERCENT OF USER RATINGS

FIG. 1

TOTAL ABSTRACTS IN ISSUE: 62
TOTAL ANALYSIS COPIES DIST: 120
TOTAL RATED & RETURNED: 47
PERCENT RETURNED: 40



we wanted answered were: Is this abstract journal useful to a group of users, and if so, why: Does it replace or supplement previously used information sources; Does it cause users to try new information sources. In short, we wanted to know the patterns of behavior change--a prodigious undertaking at best. Using mark-sensing equipment, evaluation of the next issue of CEA would have been easier to tabulate, correlate, and use. We were learning yet another tool to integrate into the system design--data gathering, reduction, and how to plan for their effect in system improvement.

3. In-House Operation.

To produce usable products from the developing system required a close running evaluation of staff activities and processing problems. Several report forms were devised and monitored to give us data for decision-making. Four of these forms are illustrated in Appendix 52.

E. Summary of Section IV.

Most of the avtivity involved in system analysis and synthesis, hardware and system selection, experimental flow and programing, and evaluation have been discussed in this section. References to specific technical procedures are included in Appendices 9, 19, 31, and 38 through 52.

Constraints were adumbrated and used in a system design which underwent several modifications as data was acquired and evaluated. Several operational decisions during our work anticipated the requirements of the ERIC network, though that network was not a reality until Phase Three of our contract. The components of a model system were identified, and many were evaluated, bringing closer the day when adult educators will realize their need for a truly interactive information service.

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SECTION IV

MECHANIZATION AND OUTPUT EVALUATION

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SECTION V

A MODEL INFORMATION SYSTEM

Staff members of the project believe some suggestions can be made to the adult education profession for improving some parts of its information system, particularly those in which books, periodicals, films, recordings or other "graphic records" are the most efficient tools. For this purpose, we outline in this section a "model" information system to serve adult educators. By "model" we mean ideal or desirable, in the sense of a goal toward which we should work. We will not, however, casually recommend that all adult educators install computers and become, overnight, members of the on-line intellectual community of the future. Nor will we parade before the profession an array of devices and esoteric techniques which the information sciences can even now bring to bear on some information problems. Instead, we will outline the types of services the profession should, in fact, be able to attain by well-directed effort over a period of the next ten years.

The term "model" is appropriate in another sense, for some of our suggestions are adaptations of information services operating in more mature professional fields and some are adaptations of techniques from well-developed systems in science and technology.

In addition to the technical work described in this Report, project staff, in the past 29 months, have consulted with many people, seeking to understand the whole gamut of information problems. This experience has enabled us to identify and consider problem areas other than those we were charged to study directly. We will comment on publication problems, the role of personal communication, the importance of improved statistical reporting, and the growth of organized programs of innovation, which integrate many communication methods into purposeful efforts toward educational change. We do not believe that better bibliographic organization is a magic cure-all for the complex communication problems of the profession.

Nonetheless, our central focus has been on planning for greatly improved use of the literature of the field through the development of services to help adult educators find out what has been written on their subjects of interest, to help them obtain the documents themselves, and to provide other specialized information services.

Aspects of the model system are grouped below in two parts: Content for a Model System; and A Model System.

A. Content of a Model System.

1. Range of Information Needs.

If we could make a series of case studies of typical adult education workers, in which we observed the actual work they do and noted systematically the information they need to do it well, we would see that these infinitely various needs can be analyzed into patterns that constantly recur throughout the profession. Some of these needs are specific and unique to the particular agency or locality, requiring improved reporting or data collection within a particular organization, or calling for better personal communication with key persons. Others may be related to a locality in which several adult education agencies are at work. Again, some of these requirements will be unique, relating to the geist of a particular institution and its style of involvement with its community. But some needs will be held in common by several agencies; for example, the need for census tract data or manpower need projections.

Finally, many similar information needs are present in any adult education agency, however, as it plans its programs, using any format or method, for any group of adults. These shared needs relating to the characteristics of adults as learners, to the processes of program planning and evaluation, to the teaching methods, devices and materials suited to adults and to the organization, finance and development of adult education, form the core of knowledge and common interest underlying the emerging adult education profession. These are the needs which can be met, in part, by improved information services which maximize the use of knowledge and experience conveyed through publications, films, tapes and other graphic records.

It is apparent, however, that all possible communication channels, including many not yet clearly understood, must be used if the information needs of the field are to be met. In the elements of a model system sketched in Part B below, all adult education agencies, local, national and international, must play an appropriate part, for each will have a set of users with which it works in closest association, whose problems it understands best, and to whom it has the most effective communication channels.

2. Planning and Facilitating Change in Adult Education.

We may anticipate in the coming decade a great increase in conscious efforts to develop planned programs of educational change in adult education. We see now an example of this in the federally supported efforts to develop adult basic education, involving universities, public school systems, state departments of education and other agencies, in a purposeful program exploiting the particular capacities of each, supported by research, demonstration, and special information services as required.

Other efforts of this type can be seen at various levels of the field, emanating from a number of the national associations serving the field. Their key characteristic is the use of a wide range of information exchange techniques integrated into purposeful efforts to effect innovation in educational systems. They are often based on "systems analysis," intended to focus the entire program from research to practice on some visible, even measurable, change in the intended target group. In these efforts an array of methods pioneered by adult educators themselves are often used--conferences, workshops, organized information campaigns, demonstrations of best practice, the use of special resource persons, and many others. Such efforts present a splendid opportunity to bring the use of publications and graphic records of all kinds into their most useful relationship with other techniques for effecting change.

3. Personal Communication.

Some information needs can only be met through one or another form of personal communication. Webs of personal contacts exist in adult education as they do in all professions. We have not been able to study these personal communication processes directly, but a little is known of their workings in other professions. It has been well established, for example, that the researchers most active in a particular area will almost invariably be in close personal communication, and we know that agency administrators and others use this method for similar purposes when they share common interests.

Some interesting questions may be raised for speculation or possible study. Are these webs typically based on some identifiable factors, perhaps personal (old school ties) or institutional (perception of "model" neighboring institution)? Are they functional in supplementing other information channels, or are they, in effect, power concentrations maintained by excluding others from the shared information? Is there any way, short of wiretapping, to siphon out some of the content of this communication for wider use?

4. Data Handling and Statistical Reporting.

Much information needed in any organization is derived from internal reporting systems, which, following their use in business and other parts of education, have in some adult education agencies been well thought out and mechanized. Some parts of these data may be of wider interest and could be merged into common data banks. We can cite the collection of data on conferences and institutes at the University of Chicago and Wayne State University.[1] Another example has been provided by the work of the AUEC-NUEA Joint Committee on Minimum Data to establish meaningful definitions and procedures for reporting by their member institutions in cooperation with the statistical reporting units of the U.S. Office of Education.

Many more efforts of this type may be expected in the coming years, and attention to the formation of central data banks as important information sources should begin.

5. Publication.

Though it has not been our purposes during this project to study the problems of rationalizing and improving publication in adult education, some comments, predictions and suggestions may be made, especially as they bear on making the intellectual content of the publications more easily accessible.

During the project period, publication of all kinds has increased and will continue to increase for the various reasons mentioned in Section II. In this period, several new periodicals were founded and several newsletter-like publications grew into periodicals or journals. Periodical-like publications form an obvious vehicle to handle many information needs which are shared by enough people to make it economical.

Since the bulk of publication is proliferating rapidly, some simple recommendations to authors, editors and publishers may make their work more accessible to users. These recommendations are: (1) wherever appropriate, title and chapter headings should precisely indicate the content of the document; (2) a subject index should be prepared; and (3) careful abstracts of the whole document and each major subsection or chapter of the work should be included within the document.

Much publication actively is grossly uneconomical. It is easy to see, for example, that if a journal issue containing 15 articles is published, and only one or two of the articles are read or even scanned by the average subscriber, publication is wasteful if viewed only as a means of bringing printed material to appropriate users. The development of microforms and other new small-edition publishing techniques have led in recent years to the introduction of various alternatives to journal publication. Since journals and other publications serve many purposes in addition to the ostensible one of conveying information, decisions on forms of publication cannot be made solely on the basis of their efficiency for that purpose. If we look a decade hence, however, the proliferation of the types of publications now so familiar may begin to taper off. In the meantime, more careful monitoring of the flow of publications by type, by subject, and by intended audience may indicate areas not yet being served and areas where wasteful duplication and redundancy are setting in. Monitoring of this type may be possible in a centralized information center which handles a large document flow.

B. A Model System.

1. Access to the Content of the Literature.

A system is required, and our studies indicate that it is clearly feasible, for improving access to the subject content of adult education publications. Far better tools are needed to enable the adult educator to determine quickly, easily, and inexpensively what has been published on the subject or problem of interest to him.

The first requirement is a regular listing of current publications, with enough analysis of their contents to allow the user to judge accurately their relevance to his interests. Though this service should be somewhat selective, it should be reasonably comprehensive, since the nature of the relationship between user and document, which makes the document relevant or meaningful, is not well understood. If possible, this current listing, whether published in one unit or separate sections, should cumulate periodically, or at least have cumulative author and subject indexes. Our investigations demonstrate that the acquisitions programs, indexing techniques and other procedures for such service are available now and that the volume of literature to be monitored is manageable.

This initial listing is the instrumental first step which makes possible the preparation of other types of content access tools which are now enormously expensive and difficult to compile. These may include comprehensive or selective bibliographies on particular subjects, evaluative reviews of the literature by subject, annual research reviews or overviews of developments in various parts of the field and, finally, comprehensive state-of-the-art reviews which summarize what is presently known and point to new directions for research and development. These review publications may be prepared on any subject and from the viewpoint of any part of the audience of adult educators and would lead, for example, to updating and routine maintenance of such works as the Brunner Overview of Adult Education Research.[2] They might be prepared by a central information center working in cooperation with subject experts, by a wide variety of national and governmental organizations which serve the field, or by expert individuals.

When such a system has been developed, particularly if it is computer aided, other services can be derived and tailored to fit the particular needs of key individuals and agencies. Various forms of these services, known as selective dissemination of information, are currently operational in other fields and could quickly be adapted to adult education. They provide for immediate notification to the user of any document entering the system which matches the profile of interests he has specified. They provide, in addition, for routine updating of the interest profile and monitoring of each individual's use of the system.

Finally, as the number of documents in the information system grows ever larger, a mechanized retrieval service is needed for searching large document files on the basis of thorough and detailed indexing of their content. We have examined many aspects of the intellectual and mechanical problems of such retrieval systems and believe such service feasible. The key intellectual tools required are the techniques of bibliographic citation, abstracting, and indexing described in this Report. These tools, including a body of controlled indexing vocabulary, are available, though much additional work is needed to perfect them.

Since these retrieval services are expensive, requiring large initial investments of time and money, they should be developed incrementally and designed to serve specific user needs. Some needs may be met by searching large document files for specific subjects or combinations of subjects, based upon accurate and deep indexing of the information content of the files.

These and other retrieval techniques may be exploited also in the preparation of special bibliographies and other publications. In addition, once such a system is fully operational, it may easily be replicated and routinely updated for use in any agency where suitable computer equipment is available. Thus, the data bank could be used by local service agencies where the volume of material and searches dictated. Various parts of the files containing particular subject areas or regional data can also be stripped off for more efficient local searching. In short, the operation of such a system may begin in a central information center, but its use may not require centralization, for it can be made operational in many locations, once the programs and data files are developed in machine manipulatable form.

2. Physical Access.

Once a publication is known to exist, how may it be provided most easily and inexpensively to a user who needs it?

Part of this provision comes, of course, from the publications which each adult educator routinely obtains as a subscriber to journals and newsletters or as part of his membership in professional associations.

Another part of the answer will involve the provision of documents from a central source either in hard copy reproductions or in other media, such as the microfilmed dissertations now available from University Microfilms, or the microfiche disseminated by ERIC and other federally-supported information systems. While hard copy reproductions still cost about four cents a page, making them usually more costly than the original publications, this cost may in time be reduced and maintain the availability of "out-of-print" material. Microforms reduce document production and dissemination costs drastically and allow compact storage of large collections. Catalogs and indexes prepared by computers in a central information service may then serve as a guide to the local microform documents.

Such services can make document access in many adult education agencies very much more efficient and less costly, since the costs of original acquisition, cataloging and analysis are done only once. The burden of these costs has made these agencies reluctant in the past to undertake library services to their clientele. We may expect in the next decade to see such collections tailored to their individual needs, requiring only desk drawer storage and a compact, inexpensive microform reader.

Still, copyright restrictions and other obstacles will keep some parts of the essential literature from being available in microform. Many persons will continue to prefer printed books and other familiar or convenient publication forms at a price. Thus, adult education collections will still be required in local staff libraries, in public and university libraries and in many of the supporting agencies, in the foreseeable future. Even this work, however, will benefit immeasurably from the regular current indexes and other content access services which have been suggested above.

3. Specialized Information Services.

Despite the development of tools for access to information, or in part because of the increased amount of information they will make available, there will be a corresponding need for highly specialized and personalized information services. These should be located in many of the existing national organizations serving special interest groups and in such agencies as state departments of education, state and regional adult education associations, the Title III resource centers and in the twenty regional laboratories being developed with U.S. Office of Education support throughout the country. These information centers should support the programs of their sponsoring agencies and should provide many kinds of services designed especially for the particular clients of these agencies. The information officers manning them should be professional staff members of the agencies, involved in all aspects of the work of the agencies. These professionals must be thoroughly familiar with the practical problems and daily tasks of their users, so that they can mediate effectively between the user and the information sources and tools which may be brought to bear on the work of the user. They can also collect documents which would otherwise go unnoticed, and they will be in key positions to contribute to literature analysis and interpretive reviews.

A possible model for such a center has recently emerged in the National Association for Public School Adult Education (NAPSAE) Adult Education Clearinghouse, established to provide public school adult educators with many of the services described above. It works in close collaboration with the ERIC Clearinghouse on Adult Education, so that the particular strengths of the two services powerfully reinforce each other. A similar cooperative effort is developing in the Adult Education Association in its Latin American Clearinghouse and other information services as well. We intend to promote more of these services in other parts of the field. The long-range result may be a series of information service centers working in collaboration with each other and with the ERIC Clearinghouse on Adult Education, which in turn will link them to the resources of the ERIC network.

4. Coordination, Research and Training in Information Services.

A cadre of persons expert in the development of information services should be trained to give aid to agencies which need advice in establishing or improving their own information services. This cadre should be staff associates in a center which might serve in addition as an informal clearinghouse for coordination and collaborative planning of new services.

Research is needed in all aspects of information services; it should grow, in part, as a by-product of the operating services themselves, for many analytical procedures for monitoring the flow of publication in parts of the field and for studying use or reaction to the services, can be built directly into the system to provide research data. Thus, user feedback in various forms can constantly improve the system and lead to new data useful to the field. In addition, there are a wide array of studies which could profitably be undertaken on user needs, refinements in indexing vocabularies, comparative studies of methods of subject analysis and retrieval, and the evaluation of information services in adult education.

Training needs to be established for two purposes. First, the working adult educator, especially the entering professional, needs introduction to many new information services and techniques, since his ability to use these tools easily will make his work more effective throughout his career. Some of this training can be built into the academic programs now preparing the adult education specialist of the future. Students should be introduced to services such as ERIC, the Scientific Information Exchange, the National Referral Service and similar services in other academic fields on which they will draw throughout their professional lives. They should know how coordinate indexing systems operate, how to use information access tools, and should reflect on how information analysis can be made an integral part of research and development of the field.

Similar training of a practical nature should be given in workshops and demonstrations to practicing adult educators so that the use of new services and the information they provide can be translated into their work.

Training programs are needed also for the professionals who will in the future devote their careers to information work.

In-service training programs can be developed in existing information centers, while in a growing number of universities training in all aspects of information science is available which might easily be incorporated into the academic programs of adult education students as well.

5. Handling Special Types of Materials.

Information needs of great urgency require special provision which must be developed in the coming years. Some of these needs may be mentioned with brief comment on how services might be provided.

a. Curriculum Materials and Aids. As the number of textbooks and other materials especially designed for use in adult education mounts in such fields as adult basic education and industrial training, some means must be found to provide meaningful description and evaluation of them. Mechanized procedures are available which can easily and economically keep information on these materials up to date and produce lists or other summary compilations tailored to almost any need.

The problem requiring research and investigation lies in the analysis of these materials. What is a meaningful description, and how can a standard summary description similar to an abstract be prepared? Small investigations in adult basic education or another circumscribed part of the field could develop such descriptive procedures. A simple and inexpensive service could then be established to provide systematic acquisition, analysis, and dissemination. When information from objective evaluation based on actual measures of learning is available, it could be incorporated into the system.

b. Foreign Language Documents. Most persons entering the profession today will spend some of their work lives in a foreign country. In addition, there is much for us to learn in the experience of our foreign colleagues and in the growing interest in comparative adult education. It is urgent that adult education now begins to build comprehensive collections of foreign literature and to incorporate it routinely into our information services.

Since such collecting is difficult and expensive, it probably should be concentrated in one or a limited number of locations, with an agreed-upon division of labor, similar to the Farmington Plan in university libraries.

Translation is the other obvious problem. Until it can be solved, foreign language publications should be included in bibliographies and other information services at whatever depth is feasible, if it be nothing more than translation of the title. Much can be accomplished, we believe, by urging foreign colleagues to prepare English abstracts or summaries. Are we prepared to provide similar aids in their languages? Eventually, we hope and expect that it will be recognized as in the national interest to establish large acquisition and translation programs in education using government funds, as is presently the case in many scientific and technical fields.

Literal translation is only one part of the problem. The other is accustoming ourselves to use the concepts prevalent in adult education in other parts of the world and to relate them meaningfully to our own ways of thinking. Specifically, this means structuring these concepts into our indexing vocabularies, so that they are available in the analysis of documents.

c. Historical and Archival Material. Many special provisions should be made for the preservation of materials which have archival and historical significance. Some of this might well be done on a sampling basis and, perhaps, in microform. An excellent beginning has been made on this work at the Library of Continuing Education of Syracuse University, which presently houses the archives of several national organizations and is widely regarded as the repository for collections of important, little-used materials. It is plausible that this function be extended and provided with support so that this Library serves the field as a "national" library of record in adult education.

d. Program Information. As adult education programs increasingly free themselves from classroom attendance, the profusion of courses, degree programs, programmed learning material, correspondence courses and other educational opportunities makes it almost impossible for the American adult to find the particular course he needs, even when he knows or suspects that it is available somewhere. The need for action on this is apparent. Again, let us suggest that readily-available computer information handling techniques make the potential bulk and impermanence of such information quite manageable. Neither do we doubt that the greater problems of acquiring the needed information and reducing it to meaningful summary form can be attacked with certainty of success. Experimentation should begin now.

6. Long-Range Financial Support.

We know that none of the national agencies or those at other levels in the field have substantial sums available to invest in the establishment of large-scale information services. We are equally convinced from our discussions with them, that they are eager to engage in information work especially directed to their particular clientele groups. If the basic task of acquiring and analyzing the vast flow of adult education literature can be mastered and brought to operational level, it will relieve these agencies of this burden and provide the basic tools with which they can develop and expand the services they deem appropriate.

Some parts of the cost of useful information services can probably be recouped from carefully devised sale of services, but the high costs of initial acquisition and analysis cannot be supported by the profession at the present time.

These factors indicate that the federal government is the most probable source of support for the initiation of services and for maintaining the basic tasks of acquisition and analysis. We recommend such investment as one of the best ways of supporting the adult education programs, which show so much promise in aiding in the solution of some of the pressing educational problems of the nation. The evolving Educational Resources Information Center of the U.S. Office of Education appears to be one plausible channel for such investment.

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SECTION V

A MODEL INFORMATION SYSTEM

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SECTION VI

AN ERIC CLEARINGHOUSE ON ADULT EDUCATION--PRESENT AND FUTURE

Developing information services similar to those outlined in Section V is a long-range task to which all parts of the adult education profession must give careful planning and involvement. Many needs can be met only by action within individual agencies. Others can best be handled by state or national organizations which have both a more general view of the field and are in active daily contact with the persons engaged in the work of adult education. They have established communication channels, vital contacts with local agencies and a tradition of service to the working adult educator. They are in the best position to provide the main bulk of information services to their thousands of members who turn to them for such help as a matter of course.

A. The ERIC Clearinghouse on Adult Education--Present.

Important elements of the model system, however, can very efficiently and economically be provided by a central information service operating as part of the ERIC network now serving the entire education profession. Such a central service best handles information activities which: (1) are large in volume; (2) are basic services necessary to support many forms of information analysis; (3) require staff members expert in information retrieval techniques; and (4) are costly to initiate and operate.

The ERIC system has been set up to provide such services throughout the field of education.[1] Specifically, we believe that the ERIC Clearinghouse on Adult Education, now operating at Syracuse University as part of the ERIC system can bring the following services into full and immediate operation.[2] From its acquisition of a wide range of adult education literature, the Clearinghouse selects the most useful documents for abstracting, indexing and processing through the Central ERIC system. These are made known through the monthly abstract bulletin, Research in Education, which contains the citation, abstract and index terms for each document, with author, subject and other indexes which will cumulate annually.[3]

In addition, the Clearinghouse, in cooperation with individuals and agencies in the adult education field, provides special bibliographies, literature reviews and other publications designed to make the literature more accessible and useful to the field. Searches for references on specific subjects are provided to qualified users. Searches are based on coordinate indexing in depth guided by the ERIC Thesaurus.[4] Many of the documents processed by the Clearinghouse are available from the ERIC Document Reproduction Service in inexpensive microfiche or hard copy form.

B. The ERIC Clearinghouse on Adult Education--Future.

Emerging from the decisions of the previous sections of this report, particularly Section V, is a clear need for a central agency to provide creative leadership in the provision and use of information. ERIC, as it exists, is primarily an information and document analysis system, based on large scale document handling activities. It is reactive to expressed or perceived needs in the field. In order to stimulate the adoption of innovations with the practice of adult education, an important long-range objective of the ERIC Clearinghouse on Adult Education, a more active stance must be taken. The Clearinghouse is in the best possible position to exercise this leadership role because it handles the research literature and because it is in close association with the professional agencies in the field.

To extend ERIC/AE's present role in this significant fashion, however, would require support to underwrite investigation into some broad areas of information transfer and to initiate other catalystic activities. LCE therefore recommends to ERIC and the adult education profession that the following priorities be established as a model for leadership in information synthesis, to be implemented as soon as possible.

1. User Studies.

In order to design useful and significant services for the active and potentially active users of adult education information, research into the information use patterns of adult educators should be undertaken. While we are fully aware of the limitations of large-scale user studies, the Parker and Paisley study of information seeking patterns of adults,[5] indicates that useful data can be derived from carefully designed studies. Our assumption is that patterns of seeking and using information vary widely according to the adult educator's academic background, the nature of analyzing institutions, and the individual characteristics of the population served. This assumption, in our judgment, is worthy of testing.

How users can be grouped best is one area for study. Do their information requirements provide a mechanism for grouping both the users and the types of services or packages that would meet their needs? Too few data are available pertaining to this important problem.

2. Non-Document Information Transfer Studies.

Many information needs are met in fact by the transfer of data itself rather than document references. How is information about educational programs best transferred? How do educators learn from the experience of others with whom there is no personal or written communication? When transfer does occur through the informal network (person to person), can the transfer processes be analyzed so that the power and effectiveness of personal communication can interact with and supplement an information center? Can adult educators be trained to draw from a comprehensive data base containing "abstracts" of ideas, evaluations, and factual information, as well as abstracts of documents, in order to effect change in their programs? These problems are susceptible to study and experiment, and should be investigated.

3. ERIC/AE--An Innovative Leader?

How does an information center become a change agent in the task of "disseminating" innovation? We are interested in developing a cadre of scholars, researchers and information specialists within the Clearinghouse to give leadership in the broad area of stimulating change. Resident scholars, engaged in both writing interpretive reviews of the literature and identifying and describing areas of critical need and elements of change, could provide a powerful impetus towards innovation and adoption of creative new practices.

We believe that the services outlined here, in their present and possible future form, provide a solid basis for the improvement of information activities in many agencies and in many places. Cooperation among the ERIC network, ERIC/AE and agencies in the field can lead to the realization of the complex of information services necessary in adult education.

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SECTION VI

AN ERIC CLEARINGHOUSE ON ADULT EDUCATION--PRESENT AND FUTURE

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SUMMARY*

This project was designed to develop information services and methods of information handling in the area of adult education--specifically, to investigate the application of traditional methods of bibliographic organization handling techniques. Adult education is characterized by rapid growth. Although data are scarce, a few studies have shown a startling increase in participation. The number of trained professionals is small, but growing, and there is a high proportion of part-time and volunteer teachers.

It was decided to develop one or two experimental services and, by means of them, to study the reaction of users, who might include teachers and leaders, program planners, administrators, the staff of supporting agencies, researchers, policy makers and the general public. It was assumed that a national information center would be a large-scale activity, that there would be conflict between the core of common interests and particular needs, that financial problems would be real, and that the variety of types of workers would require flexible selection policies and some dependence on other fields.

Against this background, it was decided to provide two types of services: (1) a listing of current publications adequately annotated or abstracted, and (2) a more deliberate computer-aided information retrieval system based on depth indexing.

The purposes in acquisition were to develop ways of getting a wide range of materials, to gather a core collection of learning research, and to develop an acquisition policy for an operational system. The basic collection was that of the Library of Continuing Education, including 400,000 items, largely pamphlets and mimeographed materials. With the help of advisors, new acquisition sources were opened up, such as churches, industry, and the military. Bibliographies in books, periodicals, and other documents were exhaustively examined for titles to order. With the centralized acquisition provided by the Educational Resources Information Center, perhaps 10 percent of acquisitions came this way without cost.

A precise definition of subject coverage presented such problems as collection materials clearly identified as adult education and cutting off at some point useful materials not so clearly defined, as, for example, documents on mass media; balancing factors against each other, as audience against available materials; and assessing "quality" on the basis of users' needs. Guidelines have been created to help with such decisions.

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*This chapter was prepared by Edith W. Bennett.

Acquisitions has been the work of one professional and a clerk, with assistance from the Syracuse University Library, and individuals and agencies in the field. About 2,500 documents have been added during the period, one third coming free or on standing orders. Cost of buying documents is estimated at 55¢ per document, or approximately $2,500 per year.

To design and test the effectiveness of systematic document representations, it was proposed to create rules for bibliographic description and subject analysis, and to test the feasibility of mechanized procedures for analysis. In-house rules were written to cope with the problems of the varied format of materials in this field and machine requirements of specific, delimited fields. Methods of analysis studied included classification, uniterm indexing, postcoordinate indexing with a controlled wordlist, and facet indexing. It was decided to use classification, subject headings, coordinate indexing, and natural text searching by computer.

To test the effectiveness of the four methods of analysis, a special test collection was made of materials on adult learning. For some months, indexing was done freely on a wide range of materials, in order to gather terms. A draft thesaurus was made and sent to leading adult educators for their reactions. Two revisions of the thesaurus were made later.

In-house rules for abstracting were written, regulating style, length, and type of abstracts The informative abstract was to be used whenever possible.

Lack of subject knowledge among abstractors was a real constraint, but they were able to continue their training in the subject while they were preparing abstracts. Staff seminars provided excellent feedback and quality was controlled by rigorous editing by the supervisory staff.

Overall system design and machine applications to output and information retrieval required information about user needs, which was sought through correspondence and consultations with adult educators, and knowledge of information handling, which was gained through a literature search and consultations with specialists. It was decided to develop a worksheet to control the form of document representations and mechanically to produce catalog cards and an abstract journal.

After investigating several systems, it was decided to design a program based on an SDS 930 computer system, a Friden Flexowriter Programatic paper-tape typewriter, model SPD, and unit record equipment for updating the developing thesaurus. A program was written for the Flexowriter, and 3 x 5 cards and two abstract journals were produced mechanically. Two computer programs were written, one of which was adopted to provide formatted copy for a third abstract journal, the other being abandoned as economically unfeasible. The content and format of the two experimental abstract journals were evaluated by users and staff, and an evaluation was also made of system operating problems.

During the study, certain problem areas in information transfer were identified, other than those which were the central focus of one project. A "model" information system is proposed, based on knowledge of user needs, anticipation of an increase in programs of educational change, a wide range of information exchange techniques, recognition of interpersonal communication, mechanization and sharing of data from internal reporting systems, and the need to make publications more accessible to users. The model includes improved access to subject content by listings of current publications, selective subject bibliographies and research reviews, and, with the aid of a computer, selective dissemination of information and mechanized retrieval service.

There should be increased information services of a specialized nature provided by national organizations. A cadre of specialists on information services should be trained, and adult educators need to be trained in new information services and techniques. Means must be found to handle curriculum materials, foreign language, historical, and archival materials, and information on available programs. Despite their interest in the service, none of the national agencies have substantial sums available to invest in large-scale information services. The Federal government is the most probable source of support for initiation of services and for maintaining the basic tasks of acquisition and analysis.

Important elements of the model system can be provided efficiently and economically by a central information service operating as part of the ERIC network. The ERIC Clearinghouse on Adult Education at Syracuse University can provide the following services -- selecting and processing documents in the adult education field for inclusion in Research in Education, and providing special bibliographies, literature reviews, and searches on specific subjects for qualified users.

There is need, however, for a central agency to provide creative leadership in the provision and use of information in adult education. ERIC/AE is in the best possible position to exercise this leadership role because it handles the research literature and it is in close association with the professional agencies in the field. It is recommended that the following priorities be established as a model for leadership in information synthesis -- user studies, studies of methods of transfering non-document information, and the development of a cadre of scholars, researchers, and information specialists within the Clearinghouse to give leadership in the broad area of stimulating change in the practice of adult education.

OE 6000 (REV. 9-66)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION

ERIC REPORT RESUME

(TOP)

ERIC ACCESSION NO.

CLEARINGHOUSE ACCESSION NUMBER | RESUME DATE — — | P.A. | T.A.

IS DOCUMENT COPYRIGHTED? YES ☐ NO ☐
ERIC REPRODUCTION RELEASE? YES ☐ NO ☐

TITLE
ADULT EDUCATION INFORMATION SERVICES, ESTABLISHMENT OF A PROTOTYPE SYSTEM FOR A NATIONAL ADULT EDUCATION LIBRARY (Three parts).

PERSONAL AUTHOR(S)

INSTITUTION (SOURCE)
Syracuse Univ., N.Y. Library of Continuing Education.
SOURCE CODE

REPORT/SERIES NO. CRP-D-152

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SOURCE CODE

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PAGINATION, ETC.
414p.

RETRIEVAL TERMS
*adult education, *models, *information processing, *information systems, classification, indexing, abstracting, library science, information dissemination, library specialists, library materials, special libraries, data processing, automation, electromechanical aids, thesauri, documentation, information retrieval, cooperative planning, annotated bibliographies, systems development, Syracuse University, Library of Continuing Education.

IDENTIFIERS

ABSTRACT

Results are reported of a study of the feasibility of a national adult education information center, in which it was proposed to (1) study information problems and resources in adult education and to recommend new services which would be most useful to the field, (2) to develop the tools of subject analysis which would be needed in these services, and (3) to explore the use of new methods of information handling in the proposed services. The report is in six sections. Section I reviews characteristics of the field of adult education. Section II takes up the nature of the literature and problems of acquisition and selection. In Section III, the problems of bibliographic and subject analysis are discussed, including citations, abstracting, and indexing. Section IV describes the work in the development and evaluation of experimental input and service products, with particular attention to the adaptation of mechanization devices and to system analysis problems. Section V outlines a model information system and Section VI specifies the parts of this model which may be provided by an ERIC Clearinghouse on Adult Education. Appendixes are composed of various documents, staff memorandums, and charts which supplement the report. (eb)

OE 6000 (Rev. 9-66)

INSTRUCTIONS FOR COMPLETING ERIC REPORT RESUME

The resume is used to identify summary data and information about each document acquired, processed, and stored within the ERIC system. In addition to serving as a permanent record of the document in the collection, the resume is also a means of dissemination. All fields of the form must be completed in the allotted spaces, but inapplicable fields should be left blank. The following instructions are keyed to the line numbers appearing in the left margin of the form:

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Resume Date. In numeric form, enter month, day, and year that resume is completed. *(Example: 07 14 66)*

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LINES 100-103. Title. Enter the complete document title, including subtitles if they add significant information. Where applicable, also enter volume number or part number, and the type of document *(Final Report, Interim Report, Thesis, etc.)*.

LINE 200. Personal Author(s). Enter personal author(s), last name first. *(Example: Doe, John J.)* If two authors are given, enter both. *(Example: Doe, John J. Smith, Ted)*. If there are three or more authors, list only one followed by "and others."

LINE 300. Institution *(Source)*. Enter the name of the organization which originated the report. Include the address *(city and State)* and the subordinate unit of the organization. *(Example: Harvard Univ., Cambridge, Mass., School of Education.)*

Source Code. Leave blank.

LINE 310. Report/Series No. Enter any unique number assigned to the document by the institutional source. *(Example: SC-1234)*

LINE 320. Other Source. Use only when a second source is associated with the document. Follow instructions for Line 300 above.

Source Code. Leave blank.

LINE 330. Other Report No. Enter document number assigned by the second source.

LINE 340. Other Source. Use only when a third source is associated with the document. Follow instructions for Line 300 above.

Source Code. Leave blank.

LINE 350. Other Report No. Enter document number assigned by the third source.

LINE 400. Publication Date. Enter the day, month, and year of the document. *(Example: 12 Jun 66)*

Contract/Grant Number. Applicable only for documents generated from research sponsored by the U.S. Office of Education. Enter appropriate contract or grant number and its prefix. *(Example: OEC-1-6-061234-0033)*

LINES 500-501. Pagination, etc. Enter the total number of pages of the document, including illustrations and appendixes. *(Example: 115p.)* USE THIS SPACE FOR ADDITIONAL INFORMATION PERTINENT TO THE DOCUMENT, such as publisher, journal citation, and other contract numbers.

LINES 600-606. Retrieval Terms. Enter the important subject terms *(descriptors)* which, taken as a group, adequately describe the contents of the document.

LINE 607. Identifiers. Enter any additional important terms, more specific than descriptors, such as trade names, equipment model names and numbers, organization and project names, discussed in the document.

LINES 800-822. Abstract. Enter an informative abstract of the document. Its style and content must be suitable for public announcement and dissemination.

E-BR
AC

FROM:

ERIC FACILITY,
SUITE 601
1735 EYE STREET, N. W.
WASHINGTON, D. C. 20006

BR-5-1019
PA 24

ED020489

FINAL REPORT
Project No. D-152
Contract No. OE5-10-118

ADULT EDUCATION INFORMATION SERVICES: ESTABLISHMENT OF A PROTOTYPE SYSTEM

Part II
Appendices

December 1, 1967

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

AC002008

FINAL REPORT

Project No. D-152
Contract No. OE5-10-118

ADULT EDUCATION INFORMATION SERVICES: ESTABLISHMENT OF A PROTOTYPE SYSTEM FOR A NATIONAL ADULT EDUCATION LIBRARY

Parts II & III -- Appendices

Roger DeCrow
Diana J. Ironside
Ronald Miller

LIBRARY OF CONTINUING EDUCATION AT SYRACUSE UNIVERSITY
Syracuse, New York

December 1, 1967

The research reported herein was performed pursuant to a contract with the Office of Education, U.S.Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

ERIC Clearinghouse
JUL 31 1968
on Adult Education

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INTRODUCTION TO APPENDICES

The 52 Appendices included in Parts II and III of this Report document the particular investigations of the project or provide back-up data to support matters referred to in the text. In most cases, the information in the staff memoranda and other documents in the Appendices is not reproduced in the Report itself. Appendices 10, 11, and 14 are documents that were not produced by the project. They are included, however, in order to supplement Section III of the Report and to bring together in one place the available literature pertaining to classification in adult education.

MEMBER AGENCIES OF THE COMMITTEE OF ADULT EDUCATION ORGANIZATIONS

Adult Education Association of the USA
American Association of Junior Colleges
American Library Association
Association of University Evening Colleges
Association for Field Services in Teacher Education
Canadian Association for Adult Education
Canadian Association of Directors of Extension and Summer Schools
Center for the Study of Liberal Education for Adults
Commission of Professors of Adult Education (A.E.A.)
Council of National Organizations for Adult Education
Evening Student Personnel Association
l'Institut Canadien d'Education des Adultes
International Association of Evening College Councils
International Congress of University Adult Education
National Association of Educational Broadcasters
National Association for Public School Adult Education
National Association of State Universities and Land Grant Colleges.
    Extension Committee on Organization and Policy
National Community School Organization
National Educational Television
National Home Study Council
National University Extension Association
Society of Public Health Educators
Universities Council on Education for Public Responsibility

SCOPE NOTE ON SUBJECT COVERAGE

ERIC CLEARINGHOUSE ON ADULT EDUCATION - 107 Roney Lane, Syracuse, N.Y. 13210

The ERIC CLEARINGHOUSE ON ADULT EDUCATION (ERIC/AE) acquires and disseminates information on the part-time, non-degree education and training of adults and out-of-school youth.

ERIC/AE is primarily interested in documents and other materials which add to useful understanding of: (1) the intellectual, psychological, social and physical characteristics of adults which significantly influence their learning processes; (2) the career or personal interests and motives which influence the educational needs of adults; (3) the methods of instruction, independent study, program planning and evaluation which are most effective in the education and training of adults; (4) the system of institutional arrangements for the provision of adult education programs and the economic, social, and philosophical factors which influence the operation and growth of this system.

To obtain general information in these four areas ERIC/AE examines documents from all areas of adult education: e.g., from industrial and military training programs; from the fields of management and labor education; from churches, museums and libraries, from local, state and federal government agencies; from educational television and the educational activities of the mass media; from informal, voluntary and community agencies; from correspondence study and other proprietary schools for adults; from evening colleges, university extension divisions and the Cooperative Extension Service; from all levels in public school systems; and from comparable sources in foreign countries.

OUTLINE OF ACQUISITION AREAS

I. ADULT EDUCATION PROCESSES

CURRICULUM DEVELOPMENT: DETERMINATION OF OBJECTIVES

job, task analysis
aptitude, interest, other diagnostic testing
community study
analysis of manpower needs, projections
analysis of social trends
etc.

PROGRAM ORGANIZATION AND ADMINISTRATION

physical facilities
finance, budgeting, accounting
recruitment of students
admission requirements and procedures
motivation, retention of students
recruitment, training, compensation of instructors
reporting, public relations
agency coordination, cooperation

STUDENT SERVICES

housing
food service
library provision
financial aid
educational counseling
vocational counseling, placement
student organizations, activities

EVALUATION

evaluation techniques (learning)
  subjective: student satisfaction, self or observer ratings, etc.
  objective: educational tests and measurements, adoption rates, follow-up studies, etc.
evaluation techniques (instruction)

II. METHODS AND TECHNIQUES OF ADULT EDUCATION

INDIVIDUAL ORIENTED

independent study
correspondence study
tutoring, individual instruction
coaching
consultation
programmed instruction
computer aided instruction
internship, apprenticeship

GROUP ORIENTED

class
discussion group
lecture
audio, visual presentation
simulation, games
community development
conferences, institutes, workshops
residential education
forums, symposia, seminars
demonstration
group processes, lab training
field trips

MASS CONTACT

educational radio
public television
information bulletins
educational use of mass media

III. ADULT EDUCATION ORGANIZATIONS

EDUCATION GIVING AGENCIES: ADULT EDUCATION A DIRECT, MAJOR PURPOSE

public schools
community-junior colleges
four year colleges
universities
Cooperative Extension Service
public libraries
residential education centers
proprietary schools

EDUCATION GIVING AGENCIES: ADULT EDUCATION A COLLATERAL PURPOSE

armed forces
churches
business, industry
labor unions
correctional institutions
cooperatives
professional, trade associations
political organizations
service clubs
voluntary organizations
etc.

COORDINATING, FACILITATING AGENCIES

local adult education councils
state associations
regional associations
national associations
local government
state government
federal government
international associations
foundations
adult education information centers

IV. LEARNING RELATED CHARACTERISTICS OF ADULTS

DEMOGRAPHIC CHARACTERISTICS

- age
- sex
- marital status
- geographical location
- educational level
- etc.

MENTAL ABILITIES

- intelligence
- aptitude
- creativity
- reasoning skills
- comprehension
- retention, memory
- attention span
- reading ability

PHYSICAL, NEUROLOGICAL CAPACITIES

- audio acuity
- visual acuity
- motor skills
- space perception
- dexterity, reaction speed

PHYSCHOLOGICAL CHARACTERISTICS

- rigidity, set
- emotional stability
- anxiety
- interests
- curiosity
- anomia
- etc.

SOCIAL CHARACTERISTICS

- income, economic level
- social class, mobility
- nationality
- race
- religion
- political preference
- employment status
- employment level
- occupation
- social roles

PRINCIPLES OF SELECTION

TECHNICAL MEMORANDUM: T-R-43 TO: Staff and Files FROM: Roger May 6, 1965

1. The subject field we cover lies in the field of education as education is defined by London and Wenkert. See attached summary and read the essay.

2. Specifically, we cover the field of adult education. Adult is defined by London and Wenkert.

3. Materials from other subject fields are covered only if the material is worked over, shaped up, selected, reviewed, interpreted, or otherwise handled for the benefit of the educator, preferably the adult educator.

4. A very highly select assortment of extremely important, seminal documents from the field of education and other basic disciplines may be included as background reading. These might include, for example, general critical overview examinations of the educational system, or such widely discussed items as Riesman, Galbraith, Snow, to pick examples from recent years. Another way to describe these books which break open important issues, e.g., Friedan on women, a poor book but provocative. General guides, hopefully including bibliographies, e.g., I recall a recent issue of Liberal Education wherein leading scholars summed up developments in their various disciplines during the past few years.

All of this is something of a bonus or whipped cream service. In general, we will cover general background disciplines by a number of techniques other than purportin to cover these areas systematically in search of material important to adult education. E.g., the reviews prepared by the professors during the past five years, the "Backgrounds Conferences" run by UC and CSLEA, Kreitlow's interview studies of related disciplines and the "critical incidents" studies.

5. We will incorporate past material on a highly selective basis, analyzing only perhaps that part we judge to be A or B level. For vocabulary building, we may want to do this on some sampling basis, perhaps with advice from the field. Old material is not presently being abstracted and indexed, but is being cataloged against the future. Is that right?

Ordering of old stuff must also be selective. But all old material judged importan should be acquired.

6. We do not cover material from undergraduate or graduate education. Now that is quite a statement. After all, 90% of the teaching of adults is nothing but the same course given to high school or college students. Moreover, except in the elite professions a very high and rapidly growing proportion of graduate education involves part-time work by persons over 21.

We cover this only when the educational matter being discussed takes into account the adulthood of the students and tries to adapt the thinking or method to this fact.

7. Community development is covered only when it involves a conscious effort to use education as one of its methods. We are not concerned with surveys of economic

resources, plans for industrial development, studies of sewage systems and myriad other topics of this nature which fly under this banner.

8. In: armed forces education, subject to principle 6.

9. We do not do the work of abstracting, indexing, etc., on material when it is reasonably certain we can get equal quality work from other sources.

10. We cover the extensive literature of group processes, leadership, group dynamics only when related to the educational process. A corollary of 3.

11. In: residential adult education. Conferences, workshops, institutes, etc.

12. In: education of aged, retirement and pre-retirement education. Social, psychological studies in so far as related to education and learning ability.

13. We collect and retain periodicals, newsletters, records of adult education associations: international, national, regional, state, local. This an archival activity. Their content is analyzed according to its substantive merit.

14. We collect and keep newsletters, announcements, brochures, etc., of particular adult education programs and agencies pending further discussion of how to handle this mass by sampling, microfilming, etc.

15. We receive many newsletters, announcements and miscellaneous materials from higher education and other sources as an aid in our search for relevant reports to order. These are scanned and discarded.

16. Student newspapers are an interesting example of 14.

17. We collect material on foreign adult education on the same basis as domestic.

18. We cover continuing education in the professions. I.e., education derived from work experience and beyond or outside the normal course of preparation for the profession.

19. We receive and scan a wide range of bibliographies in many subjects. We keep files of these only under the conditions in 3 and 4.

20. In: efforts to improve international exchange, travel, etc. to make it a better educational experience. Subject to 2; it must be adult.

21. We receive and scan for evaluation many journals in tangential fields. We should keep a record of those from which useful material is taken. If we find nothing in a reasonable period, we should stop getting.

22. We receive materials designed for or otherwise suitable for use in ae classes and programs. We even send for these. But we do not seek them out with our usual fanaticism and we do not pretend to collect systematically at this moment.

23. In: educational (open) radio, tv, films in so far as adult. Out: closed circuit and other use of these media as teaching devices in preadult education. In: any of these when used as content of adult courses. Out: all other mass media material.

24. In: education of women and some background under 3 or 4. Out: all else this topic.

25. In: foundations concerned with adult education and some background information or reference material, e.g., foundation directory, foundation newsletter.

On the converence table are the receipts of three days, sorted in or out according to these principles, numbered with the relevant principles, and with comment attached. Let us review and discuss. Very soon all the needed principles will emerge. Then they can be consolidated, rationalized, re-worded and put in more presentable form.

STAFF MEMO ON ACQUISITION SOURCES **APPENDIX 5**

WHAT ARE WE GETTING AND WHERE?

TO: LCE staff
M-R-1
FROM: Roger
20 July 1966

While toying with the idea of how we can monitor the current flow of literature, I took two quick samples for the following tabulations. The first was the first 25 cards under A,B,C,D in new catalog. The second are 100 C's waiting for Beth.

75	72	copyrighted, published or judged to be "protected"
25	28	not legally protected, so far as I could judge
25	29	dated 1965 or 1966
58	50	1960-1964
6	11	1955-1959
5	5	1945-1954
26	15	foreign, but English language
1	2	foreign language
22	18	commercial publication
16	15	put out by AE supporting agencies: AEA, CSLEA, etc.
28	21	" " " educational agencies: NEA, Council on Aging, etc.
17	10	federal govt. agencies
1	1	state govt. agencies
6	8	put out by particular AE institutions, mostly university
3	6	international agencies: UNESCO, ILO, WCOTP, etc.
	9	from psychological, medical, other subject matter journals
5	5	from educational journals
	2	put out by Esso, other business companies
	37	stuff I might send to ERIC, if they let me pick it out for them
	63	wouldn't put in ERIC central, if I were doing it

Basic question: for what purpose do we need to know what about the flow of accessions?

APPENDIX 6.

MEMO TO: Staff FROM: Roger DeCrow

SUBJECT: "SOME CRITERIA FOR DOCUMENT ASSESSMENT"

The following are some of the characteristics we should look for in assessing a document:

1. CONTRIBUTION TO KNOWLEDGE
2. NEW APPLICATIONS OF KNOWLEDGE; INNOVATIVE PRACTICES
3. EFFECTIVENESS OF PRESENTATION
4. AUTHORITY OF AUTHOR OR SPONSOR
5. HISTORICAL OR ARCHIVAL SIGNIFICANCE
6. RECENCY OF PUBLICATION
7. RECOMMENDATION OF EXPERT
8. BIBLIOGRAPHIC OR REFERENCE VALUE
9. FIELD REQUEST

Since we serve many different kinds of information needs and many kinds of users in a vast and disparate field, no guidelines will ever make our selection policies into a science. We will always run the risk of "throwing out the Rembrandts" as Alan Rees puts it. The volume of our literature and its redundancy, however, will soon make our system inefficient if we do not resolutely use our best judgment in selecting the most useful documents.

In exercising this judgment, some qualities may be suggested which presumably relate positively to the potential usefulness or significance of the document. These qualities must be assessed in different ways for different types of documents. "Clarity of expression" may be a universal value, but it must be judged differently in a formal research report than in a philosophical essay. In these interpretations, we must hold in mind the range of user groups we have identified: researchers and scholars; teachers and trainers; program planners; administrators; policy makers (e.g., legislators, university trustees, school boards, etc.); the general public and the mass media.

No documents may ever be thrown out of the ERIC/AE system, but some--about one-third--are definitely selected for negative retention. We must be prepared to explain why we select documents and pass over others. The values we should look for ought to be found in these characteristics:

1. Contribution to knowledge.
We give high priority to substantive contributions to knowledge in the field, expecially when they are based on well designed experimentations, or on orderly collections of data. These contributions may be in the form of research reviews which suggest new areas of research or present new hypotheses. They may be negative, that is, presenting evidence which challenges or contradicts common opinion, or, they may be replications, confirmations, or extensions of previous knowledge.

2. New applications of knowledge; innovative practices.
Many documents describe the application of tested methods to new areas of the field, while others may be interpretations of known principles to new areas, especially prepared to be meaningful to a new audience.

3. Effectiveness of presentation.
Though it may discuss a topic well understood, a document may have value because it presents the topic with exceptional clarity, vigor, or in terms particularly meaningful at the time. It may present new insights, or show the topic in a new context or in distinctive phraseology.

4. Authority of author or sponsor.
In our field we can not yet depend much on the doctrine of "literary warranty"--the knowledge that a document is worthwhile because it has appeared in an authoritative journal with screening by the author's peers. However, there are some journals we must give greater consideration because their editors are known for their careful selection for publication. Some authors and some sponsoring organizations have so consistently contributed to the field that anything they produce merits attention.

5. Historical or archival significance.
Even when their overt content may seem rather commonplace, some documents are significant because they are the official proceedings or recommendations of boards, organizations, conferences, etc., or, they are the record of the work of major organizations in the field, forming part of the historical record of development.

6. Recency of publication.
In general, we handle documents from 1966 and later, but items reaching back to 1960 may be included if they are judged to be of outstanding importance. Documents before 1960 must be justified as "landmark" studies.

7. Recommendation of expert.
Documents may be judged significant on the basis of the recommendation of a subject expert, either on the staff of ERIC/AE or one engaged from the field to help us make such decisions. Recommendations may also be found in research reviews or other documents we are handling. Often, the author will specifically point out those studies he thinks are of outstanding importance.

8. Bibliographic or reference value.
Contains bibliography, abstracts, summaries of data, or other useful material.

9. Field request.
Query demands from users, especially when repeated frequently, indicate a need and usefulness for documents on a particular topic or subject area.

APPENDIX 7

THE LIBRARY OF CONTINUING EDUCATION
at SYRACUSE UNIVERSITY

ADULT EDUCATION PERIODICAL HOLDINGS

ROGER DeCROW | DIRECTOR

DIANA J. IRONSIDE | ASSOCIATE DIRECTOR

BETTY JANE VAUGHN | LIBRARIAN

107 RONEY LANE | SYRACUSE, NEW YORK 13210 | 315 476-5571 EXT. 3493

THE LIBRARY OF CONTINUING EDUCATION at SYRACUSE UNIVERSITY

The Library of Continuing Education at Syracuse University has prepared the attached list of journals which are currently received by the Library. Among its holdings are journals and magazines published here and abroad. This catalog, listing only the more significant periodicals which are currently received, is published as an aid to workers in the field of adult education.

Since we do not have duplicate copies of these periodicals, we cannot provide a loan service; for any items listed herein, the publication sources ought to be contacted directly.

107 RONEY LANE SYRACUSE, NEW YORK 13210 | 315 476-5571 EXT. 3493

ADULT EDUCATION (Australia)

Council on Adult Education
256 Flinders Street
Melbourne, Victoria, Australia

Quarterly.

Holdings: Bound
Vol. 1, No. 1 (Sept., 1956) - present.

ADULT EDUCATION (Florida)

Florida State Department of Education
Division of Vocational, Technical and Adult Education
Tallahassee, Florida 32300

Holdings: 1957 - present.

ADULT EDUCATION (Great Britain)

National Institute of Adult Education
35 Queen Anne Street
London, W.1. England

Quarterly.

Holdings: Bound.
Vol. 22, No. 1 (Sept., 1949) - present.
Also, intermittent issues between 1927 (Vol. 1) and June, 1949 (Vol. 22).

ADULT EDUCATION

Adult Education Association of the U.S.A.
1225 Nineteenth Street, N.W.
Washington, D.C. 20036

Quarterly.

Holdings: Bound.
Vol. 1, No. 1 (Jan., 1929) - present

Formerly called: JOURNAL OF ADULT EDUCATION (1929-1941)
ADULT EDUCATION JOURNAL (1942-1950)

ADULT EDUCATION BULLETIN

National Education Association
Department of Adult Education
New York, New York

Quarterly.

Holdings: Bound
Vol. 1, No. 1 (June, 1936) - Vol. 14, No. 6 (Aug., 1950).

Missing Vol. 8, No. 9 (June, 1944).

Ceased publication 1950.
Merged with ADULT EDUCATION (U.S.).

ADULT EDUCATION IN FINLAND

Kansanvalistusseura
Museokatu 18 A2
Helsinki 10, Finland

Quarterly.

Holdings: Vol. 1, No. 1 (Summer, 1956) - present

ADULT JEWISH EDUCATION

National Academy for Adult Jewish Studies
218 East 70th Street
New York, New York 10021

Quarterly.

Holdings: Winter, 1955 - present.

Missing: 1958, 1959.

ADULT LEADERSHIP

Adult Education Association of the U.S.A.
1225 Nineteenth Street, N.W.
Washington, D.C. 20036

10 issues per year.

Holdings: Vol. 1, No. 1 (May, 1952) - present.

AIKAMERRKKI

Veikko Lahde
Lusankatu 5B
Helsinki, Finland

Holdings: No. 1 (Jan., 1965) - No. 1 (Jan., 1967).

Formerly called: Tyolaisopeskelija - "The Worker Student"

APPLIED BEHAVIORAL SCIENCE, JOURNAL OF

National Training Laboratories
National Education Association of the U.S.A.
1201 Sixteenth Street, N.W.
Washington, D.C. 20036

Quarterly.

Holdings: Vol. 1, No. 1 (1965) - present.

Missing: Vol. 1, Nos. 1, 4 (1965).

ARBEIT UND LEBEN - "Work and Life"

Arbeitskrels fur die Bundesrepublik Deutschland
34/38 Fredrich Ebert Strass
Dusseldorf 4, Germany

Holdings: No. 5 (Mar., 1964) - present

AUEC NEWSLETTER

Association of University Evening Colleges
Gurth I. Abercrombie
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115

6 issues per year

Holdings: Old Series - Vol. 12 (Oct., 1951 - Vol. 13, No. 1 (Dec., 1952).

New Series - Vol. 1, No. 1 (Dec., 1952) - present.

AUSTRALIAN HIGHWAY, THE

Workers' Educational Association
52 Margaret Street
Sydney, Australia

Irregular.

Holdings: Vol. 39, No. 1 (Feb., 1957) - present.

AUSTRALIAN JOURNAL OF ADULT EDUCATION

Australian Association of Adult Education
Division of Post-graduate and Extension Studies
University of New South Wales
Kensington, Sydney, Australia

Bi-annual.

Holdings: Bound
Vol. 1, No. 1 (July, 1961) - present

AUTONOMOUS GROUPS

Committee on Autonomous Groups
Maria Rogers
1004 Hotel Ambassador
New York, New York

Holdings: Vol. 1, No. 1 (1945) - Vol. 15, Nos. 3,4 (1960)

Ceased publication.

BIBLIOGRAPHIE DER ERUACHSENENBILDUNG - Bibliography of Adult Education

Padagogischen Arbeitsstelle des
Deutschen Volkshochschul-Verbandes
Eysseneckstasse 6
Frankfurt a Main

Holdings: Vol. 2, No. 2 (April, 1963) - present.

COMMUNITY DEVELOPMENT BULLETIN

Community Development Clearinghouse
University of London
Institute of Education
Malet Street
London, WC1, England

Quarterly.

Holdings: Vol. 5, No. 1 (Dec., 1953) - Vol. 15, No. 5 (Dec., 1964).

Missing: Vols. 1,2,3,4 (all); Vol. 6, No. 4;
Vol. 8, Nos. 1,2; Vol. 9, No. 4.

Ceased publication

CONTINUING EDUCATION FOR ADULTS

CSLEA
138 Mountfort Street
Brookline, Massachusetts 02146

Holdings: Bound
No. 1 (July, 1961) - present.

CONTINUING EDUCATION REPORT

University of Chicago
The Studies and Training Program in Continuing Education
5835 Kimbark Avenue
Chicago, Illinois 60637

Irregular.

Holdings: No. 1 (Sept., 1965) - present

CONTINUOUS LEARNING

Canadian Association for Adult Education (CAAE)
Corbett House
21-23 Sultan Street
Toronto 5, Ontario, Canada

Holdings: Bound
Vol. 1, No. 1 (Nov., 1936) - present

Formerly called: ADULT LEARNING (1936-1939)
FOOD FOR THOUGHT (1940-1961)

COOPERATIVE EXTENSION, JOURNA

Extension Journal
Room 42, Agricultural Hall
University of Wisconsin
Madison, Wisconsin 53706

Quarterly.

Holdings: Bound.
Vol. 1, No. 1 (Spring, 1963) - present.

LA CULTURA POPULARE - "Culture of the People"

Dell Unione
Italiana della cultura popalare
Via F. Daveria 7
Milano, Italia

Holdings: Vol. 38, No. 1 (Feb., 1966) - present.

EXTENSION SERVICE REVIEW

U.S. Department of Agriculture
United States Government Printing Office
Washington, D.C. 20250

Monthly.

Holdings: Vol. 31, No. 1 (Jan., 1960) - present.

Missing: Vol. 31, Nos. 2,3; Vol. 32, Nos. 4,5,7.

FURTHER GUIDANCE

Turnstile Press
10 Turnstile
London WC1, England

Quarterly.

Holdings: Vol. 3, No. 2 (Sept., 1949) - Vol. 4, No. 1 (June, 1950).

Ceased publication May, 1951.

HIGHWAY, THE

Workers' Educational Association
27 Portman Square
London W1, England

Holdings: Vol. 50 (Nov., 1958 - April, 1959).

Ceased publication 1959.

HOME STUDY

National Extension College
Shaftesbury Road
Cambridge, England

Holdings: No. 1 (March, 1967) - present

HOME STUDY REVIEW

National Home Study Council
1601 Eighteenth Street, N.W.
Washington, D.C. 20009

Quarterly.

Holdings: Vol. 1, No. 1 (1960) - present

INDIAN JOURNAL OF ADULT EDUCATION

Indian Adult Education Association
17B Indraprastha Marg.
New Delhi, India

Monthly.

Holdings: Bound.
Vol. 3, No. 1 (Dec., 1941) - present

Missing: Vols. 4,5,6,7,9,11 (all); Vol. 15, No. 4
Vol. 27, No. 3.

INDUSTRIAL TRAINING INTERNATIONAL

Pergamon Press
4 Fitzray Square
London, W1, England

Holdings: Vol. 2, No. 1 (Jan., 1967) - present.

INTERCOM

Foreign Policy Association
345 East 46th Street
New York, New York 10017

6 issues per year.

Holdings: Vol. 1, No. 4 (April, 1959) - present.

Missing: Vol. 7, Nos. 1,6; Vol. 8, Nos. 1-5.

INTERNATIONAL BULLETIN OF WORKERS' EDUCATION

International Federation of Workers' International Association
Temple House
27 Portman Square
London W1, England

Holdings: No. 1 (April, 1951) - present.

Missing: No. 30 (1966).

INTERNATIONAL CONGRESS OF UNIVERSITY ADULT EDUCATION

International Congress of University Adult Education
The Secretary
138 Mountfort Street
Brookline, Massachusetts 02146

Irregular.

Holdings: Bound
Vol. 1, No. 1 (April, 1962) - present.

INTERNATIONAL JOURNAL OF ADULT AND YOUTH EDUCATION

UNESCO
Division of Educational Materials
Place de Fontenoy
Paris 7^{e}, France

Quarterly.

Holdings: Bound
Vol. 1, No. 1 (Jan., 1949) - Vol. 16, Nos. 3,4 (July, 1964).

Ceased publication.

Formerly called: FUNDAMENTAL EDUCATION (1949-1952)
FUNDAMENTAL AND ADULT EDUCATION (1952-1961)

INTERNATIONAL QUARTERLY OF ADULT EDUCATION

World Association for Adult Education
16 Russell Square
London WC1, England

Quarterly.

Holdings: Vol. 1, No. 1 (June, 1932) - Vol. 2, No. 4 (May, 1935).

INTERNATIONAL REVIEW OF COMMUNITY DEVELOPMENT

Centro di educazione professionale per assistenti sociali
Piazza Cavalieri di Malta 2
Rome, Italy

Holdings: No. 1 (Jan., 1958) - present.

Missing: Nos. 11, 12 (1963-1964).

INTERSTATE BULLETIN - ADULT ELEMENTARY EDUCATION

Department of Adult Education
New York State Education Department
Albany, New York 12224

Holdings: Vol. 1, No. 2 (April, 1925) - Vol. 8, No. 3 (Jan., 1933).

Formerly called: ADULT EDUCATION (1928-1932)
ADULT EDUCATION QUARTERLY (1932-1933).

KANSANOPISTO FOLKHOGSKOLAN - Society of Folk High Schools

Kansanopisto Folkhogskolan
Helsinki, Finland

Holdings: No. 6 (June, 1965) - present.

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS, JOURNAL OF

National Association of Educational Broadcasters
14 Gregory Hall
University of Illinois
Urbana, Illinois 61801

Holdings: Vol. 16, No. 1 (Oct., 1956) - present.

Missing: Vol. 16, No. 3; Vol. 18, No. 7;
Vol. 20, Nos. 3-5.

NOTES AND STUDIES

European Bureau of Adult Education
Huize "tranenburgh"
Hoflaan 22
Bergen, The Netherlands

Holdings: Bound
No. 1 (March, 1955) - present.

Missing: No. 6 (1957).

NUEA SPECTATOR

NUEA
1820 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Bi-monthly except August and September.

Holdings: Vol. 1, No. 1 (Oct., 1935) - present.

Formerly called: NUEA BULLETIN (1935-1956).

OBRAZOVANJE ODRASLIH

Urednestvo 1
Uprava
Zagreb, Yugoslavia

Holdings: No. 1 (Jan., 1959) - present.

ONE AND ALL

National Adult School Union
Drayton House
Gordon Street
London WC1, England

6 issues per year.

Holdings: July, 1965 - present.

OSTERREICHISCHE VOLKSHOCHSCHULE - Austrian Folk High School

Osterreichische Volkshochschule
Rudolfsplatz 8
Wein I, Austria

Holdings: No. 55 (Dec., 1964) - present.

PROBLEMI DI EDUCAZIONE POPOLARE - Problems of Education of the People

Fratelli Scaravcglio
Via Cardinal Massaia 106
Torino, Italy

Holdings: Feb., 1965 - present.

PUBLIC SCHOOL ADULT EDUCATOR

NAPSAE
1201 Sixteenth Street, N.W.
Washington, D.C. 20036

5 per year.

Holdings: Bound
Vol. 1, No. 1 (Sept., 1957) - Vol. 3, No. 5
(May, 1960).

Ceased publication.

REALTA E PROBLEMI DELL EDUCAZIONE DELGI ADULTI - Reality and Problems Concerning the Education of Adults

Centre di Cultura Popolare
Palazzo della Cevita del Lavoro
Rome, Italy

Holdings: Vol. 13, No. 1 (Jan., 1964) - present.

SCOTTISH ADULT EDUCATION

Scottish Institute of Adult Education
Education Offices
Alloa, Scotland
Attn: T.E.M. Landsborough

3 issues per year.

Holdings: Bound
No. 1 (March, 1951) - present

SOCIOLOGY OF EDUCATION ABSTRACTS

Department of Education
University of Oxford
15 Norham Gardens
Oxford, England

Quarterly.

Holdings: Vol. 1, No. 1 (Jan., 1965) - present.

TELEVISION AND ADULT EDUCATION

C.C.P.
Culture et Television
27 rue Cassette
Paris 6e, France

Quarterly.

Holdings: Bound
No. 1 (July, 1960) - present.

Missing: No. 11

TRAINING IN BUSINESS AND INDUSTRY

Gellert-Wolfman Publishing Company
33 West 60th Street
New York, New York 10023

Monthly.

Holdings: Vol. 2, No. 3 (May-June, 1965) - present.

TRAINING AND DEVELOPMENT JOURNAL

American Society for Training and Development
313 Price Place
P.O. Box 5307
Madison, Wisconsin 53705

Monthly.

Holdings: Vol. 11, No. 3 (May-June, 1957) - present.

Missing: Vol. 12, No. 1; Vol. 14, No. 10;
Vol. 18, Nos. 1,2,12.

Formerly called: JOURNAL OF THE AMERICAN SOCIETY OF TRAINING DIRECTORS (1947-1962)
TRAINING DIRECTORS JOURNAL (1962-1966)

Present journal incorporates TRAINING RESEARCH ABSTRACTS since Vol. 20, No. 1.

TUTORS' BULLETIN OF ADULT EDUCATION

Tutors' Bulletin of Adult Education
Cartwright House
2 Broad Street
Hanley
Strobe-on-Trent, England

Quarterly.

Holdings: No. 86 (1952) - No. 105 (Dec., 1956).

VOLKSHOCHSCHULE IM WESTEN - Folk High School in the West

Verlag Aurel
Bongers
435 Ricklinghausen
Pastfach 220, West Germany

Holdings: Vol. 3, Nos. 5,6 (Aug-Sept., 1951) - present.
Intermittent numbers from 1951 - 1961.

Missing: Vol. 13, No. 2 (April, 1961).
Vol. 15, No. 4 (Aug., 1963)

Not available according to letter of June 1, 1967 from publisher.

WOMEN'S EDUCATION

AAUW
Education Foundation
2401 Virginia Avenue, N.W.
Washington, D.C. 20037

Quarterly.

Holdings: Vol. 1, No. 1 (March, 1962) - present.

WORLD ASSOCIATION FOR ADULT EDUCATION BULLETIN

World Association for Adult Education
16 Russell Square
London WC1, England

Holdings: No. 1 (1919) - No. 22 (1924)
New Series: No. 1 (1932) - No. 38 (1944).

Ceased publication.

RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING

(Revision of Citation Rules which updates T-D-40, and all the Library Notes, L-D-9, L-D-9 [rev.], T-RM-68, L-PM-17, L-PM-18)

Memorandum: T-D-65 (Revised) To: Staff and Files FROM: D.J. Ironside

December 16, 1965

These Citation Rules, together with Rules for Indexing and Rules for Abstracting constitute the rules for bibliographic and subject analysis used as of this date in the Library of Continuing Education. All numbers of fields in these rules refer to fields as laid out on the LCE Worksheet. Readers will note that the rules relate more to format than to judgment about bibliographic information. They have been compiled with the assumption that librarians applying these special rules drawn up by LCE will be familiar with standard ALA and LC cataloguing and classification rules.

FIELD A. SOURCE OF DOCUMENT

This field is for the source from which LCE acquired the document; provided by the LCE Librarian.

(a) Microfilms acquired from University Microfilms should show University Microfilms as the source of document. Do not use "Hall and McChesney"; they are simply suppliers.

FIELD B. SOURCE OF CITATION

When a citation (bibliographic data and/or abstract) is originated by the LCE staff, the initials LCE are entered in this field. When the citation and/or abstract are not originated by the LCE, enter the source of the citation. Examples: Dissertation Abstracts; ERIC.

General Formatting Rules: Use with T-D-65 (Rev.). January 11, 1966

1. Analysts should format fields as they will appear in CEA and Catalog cards.

   As much as possible, minor changes can be accomplished by the Flexowriter operator.

2. Begin all typing at the left margin line of the Document Analysis Worksheet, except as follows:

   FIELDS 2 and 3: set tabs to enter data at left field boundary.

   FIELDS 4 and 5: do not indent second lines of MAIN ENTRY fields.

   FIELD 6: indent first line of TITLE 2 spaces as indicated by vertical position line, but bring second line out to left margin as usual.

   FIELDS 7,8,9: insert semicolon [;] and one space between each JOINT AUTHOR, EDITOR, SPONSOR if more than one entry is needed.

   FIELD 17: insert two spaces between each LANGUAGE abbreviation.

   FIELD 19: insert two spaces between SERIES, CONTRACT NO., and REPRINT.

   FIELDS 26,27: SUBJECT HEADINGS, AND ADDED ENTRIES are begun 2 spaces from left margin, at field guide line, second lines are indented two more spaces. Subject Headings are all in caps; Added Entries capitalizes the first significant word only unless proper names are used.

   FIELDS 28,29: separate each TERM with two spaces.

   FIELD 30: type ABSTRACT single spaced, with no dashes at right margin unless word normally contains it; e.g. co-operate.

FORMATTING RULE FOR SECOND CARD, e.g. CARD 2

Card 2 to include author, title (short form), sign of omission (...) and blank line. Card 2 note entered manually near the center of the card than on samples to date. "see next card" note at bottom of card is A-OK.

FIELD 1. CLASS NUMBER

The appropriate class number from the LCE classification schedules is entered in this field. It is assigned by the LCE Librarian before the document is passed to the Literature Analyst.

(a) Special Class Numbers

FS	Filmstrips
JP	Journals and periodicals
MF	Microfilms and all microforms
PR	Phonograph and disc recordings
TR	Tapes and tape recordings

Such special materials and annual reports, bibliographically non-separate series and other continuations that are shelved together must receive the same class number. These class numbers are in Mrs. Marengo's office. (See Field 2 a.)

FIELD 2. DOCUMENT NUMBER

The document number is assigned to the DOCUMENT ANALYSIS WORKSHEET and to the document itself after the analysis is completed and the WORKSHEET is ready to be logged into the MACHINE ROOM DOCUMENT LOG BOOK. The document number is the number assigned to each distinct document or each unit of information that is analyzed and is in absolute ascending order in the log book.

(a) Journals, Annual Reports and Continuations

Permanent document numbers are assigned to these materials because they are shelved together. Records are kept in Mrs. Marengo's office. They are derived in the following way:

Filmstrips. Numbers are applied in simple ascending order, following the letters FS (class number)

Journals and Periodicals. The number is preceded by the first letter of the first important word in the title. e.g. JP:C4 (Journal class no. from FIELD 1: Continuous Learning)

Microfilms. Document numbers for microfilms: followed by a number in simple ascending order. MF:76 (Class no. plus film no.)

Phonographs and Discs Recordings. The letters PR are followed by the document number in simple ascending order. e.g. PR:7 (Class no. plus phonograph no.)

Tapes and Tape Recordings. The letters TR are followed by a document number in simple ascending order. e.g. TR:7 (Class no. plus tape no.)

Series. Those series shelved together, whether catalogued as a series or as individual monographs, receive a permanent document number. Permanent document number is sub-divided by number of series. e.g. CSLEA. Notes and essays, no. 9. C33:81/9

(b) Analytics

In order to derive new document numbers for analytical entries of continuations or monographs, the following symbols are used in combination as required.

Document number followed by a dash (-before last two digits of a year.).
Slash (/) before a volume or series
A left parenthesis [(] for issue number or part number.
A period (.) for the first page of an article.
e.g. Document 180, Volume 30, Part 2,
Page 30 is coded as: 180/30(2.30

Document 180, 1964, page 23 is coded
as: 180-64.23

FIELD 3. CLASS CODES

This field of information is left vacant for the moment, but will be used later for classification experiments.

FIELD 4. MAIN ENTRY (Personal Author)

The first personal author of a work is entered in this field with last name first, followed by a comma, first name followed by second initial, if known, then a period.

e.g. Wood, Hugh B.

If there is more than one personal author, additional joint authors should be entered in the joint author field, number 7.

(a) Analytics.

When doing analytics of continuations or monographs, the author of the article or section being analyzed, if a personal author, is entered in this field. Do not enter the author of the main work in field 4. See field 10.

FIELD 5. MAIN ENTRY (Corporate Authors)

Refer to the ALA Rules for "Corporate Bodies as Authors." Listed below are some of the general rules for guidance.

(a) Government publications. Enter under the countries or nations, states, cities, towns, and other government districts, official publications issued by them or by their authority. Spell out geographic headings in full with the exception of the United States (use U.S.). Full names of government agencies are to be used and if there are sub-divisions, sub-divisions should follow the name of the larger unit after one space. The word "department" should be abbreviated to Dept.

e.g. U.S. Civil Service Commission. Office of Career Development.

Certain government sub-divisions are used as direct sub-divisions under U.S. -- bureaus or offices subordinate to an executive department, ministry or secretariat.

e.g. U.S. Office of Education. (Not U.S. Dept. of Health, Education and Welfare, Office of Education.)

U.S. Federal Extension Service.

U.S. Office of Manpower, Automation and Training.

When the bureau or office has a name which might apply to another department, enter it under the proper department with reference from the bureau.

e.g. U.S. Treasury Dept. Bureau of Accounts.

(b) Societies. General rule. Enter a society under the first word of its latest corporate name.

e.g. Adult Education Association of the USA.

(c) Institution. General rule. Enter an institution, using the latest name under the place in which it is located.

e.g. Boston. Public Library.

Exception. Names beginning with a proper noun or proper adjective should be entered under the first word of its name with the name of the place added to the heading if it does not occur in the name of the institution, unless the institution is so well known as to make the addition of the place unnecessary.

e.g. Smithsonian Institution.
British Museum.

(d) Institutes, Conferences, Conventions, etc. General rule Enter institutes, meetings, conferences, etc., under the name of the meeting except where they are meetings of of members of a society or other body and have no distinctive name of their own. Add name of city and year of conference.

e.g. UNESCO Second World Conference on Adult Education, Montreal, 1960.
Canadian Association for Adult Education. National Conference, Ottawa, 1961.

If a conference or a meeting is held at an institution, use the name of the institution rather than the city.

e.g. Conference on University Adult Education, Michigan State University. 1963.

(e) Foundations, corporations, etc. The full and proper name of the organization without designations such as "Inc.", to be used in this field. Those having personal names, e.g. The A.W. Mellon, Educational and Charitable Trusts, is entered with the surname first, followed by initials or christian name, followed by the descriptive portion of the name.

e.g. Mellon, A.W., Educational and Charitable Trusts.

A period (.) should be added at the end of each corporate entry. When there are sub-divisions of a corporate entry, the first part of that entry is followed by a period (.) and one space, the second part by a period (.) and one space and so on.

(f) Journals and periodicals. Journals and periodicals are entered under title (Field 6.). This means that when a journal title is being catalogued, FIELDS 4 and 5 are not filled in.

FIELD 6: TITLE

Use full title and include sub-titles when useful information is contained in them. Capitalize only the initial letter of the first word of the title. Use a semi-colon (;) to separate title from sub-title and follow the full title by a period (.).

e.g. A guide to neighborhoods; a manual for guidance for dealing with inter-group problems in the neighborhood undergoing change.

When title entry on worksheet omits some parts of title as on document, use three dots (...) to indicate the omission. When omitted portion is at beginning of title, leave one space after the last dot and do not capitalize the first letter of word following last dot.

e.g. Title as on document; Proceedings repeated on adult education. Title on worksheet reads: ... residential adult education.

When a portion of the title is omitted in the middle of the title, use three dots immediately following last word of title used and leave one space before entering remainder of title used.

e.g. Title as on document; Adult education, conferences and proceedings from residential adult education centers. Title as on worksheet: Adult education... residential adult education centers.

If the word following the last dot is a proper noun, it is capitalized.

(a) Foreign language publications. Enter the title in the language of the original document and follow it in parentheses with an English translation of that title.

(b) Annual reports. For such reports the single word "Report." is used as the title and the frequency of the report is entered in field no. 18, if it is an open entry. (NB. Not on analytics.)

(c) Journals and Periodicals. Open entries for journal titles are made under title. This means that the main entry is the title of the journal, AND is entered in Field 6 and no entry is made in Fields 4 or 5. Adjectives denoting the frequency of publication are omitted from the title without mark of omission and are entered in Field 18.

(d) Analytics. Analytics of monographs or journals that do not have personal or corporate authors are entered in Field 6 and no entries in Fields 4 and 5 are made.

FIELD 7. JOINT AUTHORS

For joint authors of publications other than the first author which is entered in Field 4: authors should be cited as in Field 4 -- last name, first name, middle initial. If there is more than one joint author, list all the joint authors in this way. Follow each name with a semi-colon (;) and separate each name with one space. Note that the designation "jt. auth." is not typed at the end of this field by the Literature Analyst but is entered automatically by the Flexowriter on the Input Form.

FIELD 8. EDITOR

Editors or other people such as compilers, translators, or illustrators, if important, and not used as main entry, should be entered in a manner similar to joint authors. Follow each name with a semi-colon (;) and separate each name with one space. Note that the designation "ed." is not typed at the end of this field by the Literature Analyst but is entered automatically by the Flexowriter. If only one editor is entered, his name is followed by a comma. When two or more editors are entered, the final name is followed by a comma.

e.g. DeCrow. Roger E.,
DeCrow, Roger E.; Ironside, Diana J.,

(a) Journals, Continuations, etc. Only note important editors of journals, continuations or other open entries in this field.

FIELD 9. SPONSOR

This field is for agencies sponsoring a study or a conference. The name of the agency should be entered in full, following the general rules for corporate author entry. Follow each name with a semi-colon (;) and separate each name with one space. Note that the designation "sponsor" is not typed at the end of this field by the Literature Analyst but is entered automatically by the Flexowriter. When only one agency is entered, it is followed by a comma (,).

e.g. National Education Association,

When two or more agencies are entered, the last agency is followed by a comma (,).

e.g. National Education Association; Farm Education Association,

(a) Journals, Periodicals, Conference Reports, etc. The organization or association responsible for publishing the journal (that is, official organs) or responsible for the sponsorship of a conference, should be entered in this field, followed by a comma (,). If there is more than one name, separate the names with a semi-colon (;) and one space. The last entry is followed by a comma (,).

FIELD 10. FOUND IN (Analytics)

This field is used for citing the whole document in which an analytic is found. Some general and specific rules for analytic entries are given below:

(a) Analytics for bibliographically-separate parts. If a series of separate parts is catalogued as a unit, an analytic for each part must be made, using author or title entry as the main analytic of each part. Note that the place, publisher, date, and pagination should be entered into the appropriate Fields (11,12,13, and 14 and 15) and not be entered in Field 10 as is customary in normal cataloguing.

e.g. Thomas, Alan M.
Adult education. (IN Citizens' Forum pamphlets.) Toronto, CAAE, 1960.

Note that only the information in parentheses is included in Field 10.

Note also that the word IN is in capital letters and is followed by one (1) space.

FIELD 11: PLACE OF PUBLICATION

Place of publication should be the city, followed by the state, province, or country, where such information is needed to identify the city. All names of cities should be spelled out in full with the exception of the abbreviations St., Ste., Mt. The following state abbreviations should be used where state is added to the name of the city for purposes of identification. A comma (,) should follow the name of the place of publication.

Ala.
Alaska
Ariz.
Ark.
Calif.
Colo.
Conn.
Del.
D.C.
Fla.
Ga.
Guam
Hawaii
Idaho
Ill.
Ind.
Iowa
Kan.
Ky.
La.
Me.
Md.
Mass.
Mich.
Minn.
Miss.
Mo.
Mont.
Neb.
Nev.
N.H.
N.J.
N.M.
N.Y.
N.C.
N.D.
Ohio
Okla
Or.
Pa.
P.R. (Puerto Rico)
R.I.
S.C.
S.D.
Tenn.
Tex.
Utah
Vt.
V.I. (Virgin Islands)
Va.
Wash.
W.Va.
Wis.
Wyo.

e.g. Ann Arbor, Mich.,

(a) Theses. For all theses in hard copy, the place of publication is the institution where the thesis was submitted.

(b) Microfilms. For microfilmed theses or other microfilm or microfiche documents, place of publication is the place of the publisher of the document in hand, that is, the microfilm or microfiche. For example, any microfilms secured from University Microfilms should cite Ann Arbor as the place of publication, since this is where University Microfilms is located.

FIELD 12. PUBLISHER

The name of the publisher is entered in this field, followed by a comma (,).

(a) Commerical Publishers. Enter commerical publishers using accepted abbreviations for name as cited in the Cumulative Book Index and Books In Print. If the name of the publisher included INC., LTD., etc, do not include this phrase as part of the name.

(b) Institutions and organizations. These should be spelled out in full except for certain well-known organizations listed below. When it is important to cite an institution and a sub-division as publisher, cite sub-division first, followed by larger unit.

e.g. Dept. of Extension, University of British Columbia.

The following abbreviations are used to represent agencies when they are publishers. No other agencies may be abbreviated. Do not use periods in abbreviations except as noted in U.S. Dept. of HEW.

AAAE	American Association for Adult Education
AEA	Adult Education Association of the USA
AUEC	Association of University Evening Colleges
AVA	American Vocational Association
CAAE	Canadian Association for Adult Education
CSLEA	Center for the Study of Liberal Education for Adults
GPO	Government Printing Office
ICEA	Institut canadien d'education des adults
NAPSAE	National Association of Public School Adult Education
NEA	National Education Association
NSSE	National Society for the Study of Education
NUEA	National University Extension Association
OMAT	Office of Manpower, Automation and Training
UCAE	Universities Council for Adult Education
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAFI	United States Armed Forces Institute
USOE	U.S. Office of Education
U.S. Dept. of HEW	U.S. Dept. of Health, Education and Welfare

(c) Dissertations and theses. For dissertations and theses in hard copy, the publisher is the name of the institution which is granting the degree. The name of the school or department within the institution should be included as part of the publisher, if known.

(d) Microfilms. The publisher of a microfilm or other microform is the publisher of the microform and not the institution under whose aegis the original document was published.

FIELD 13. COPYRIGHT DATE

This date should be entered only if there is a difference of two years or more between this date and the date of publication. A small c is entered before the date with no space. If only one date is found on a publication, enter date in Field 14 even if it is the copyright date, but omit the "c". Follow it with a period (.). In no case use brackets or parentheses.

e.g. c1959

(a) Microfilms. If there are two or more years between the date the thesis was submitted and the date it was microfilmed, enter the date of submission in Field 13. If only date on microfilmed document is the date of the thesis itself and it is obviously not the date of the microfilmed edition, enter the date of thesis in Field 13 and enter n.d. in Field 14.

FIELD 14. PUBLICATION DATE

This field must be filled in even if we must estimate the publication date. If only one date on a document is found, enter it in Field 14 in preference to Field 13. This is the last date found on the title page or on the reverse of the title page. Follow it with a period (.). When cataloger must estimate date of publication for Field 14, this estimated date is entered 1946?. When no date is known for a document and it is impossible to estimate a date, enter n.d. to indicate that no date of publication is known for the document.

(a) Microfilms. The date of publication of a microfilmed document is the date that it was microfilmed. If there is a difference of two or more years between the date of microfilming the thesis and the date of submission, enter the date of submission in Field 13 and date microfilmed in Field 14.

(b) Open entries. For periodicals, journals, annual reports, continuations, and other series that are entered as a whole on the open entry format, the date of publication is the date of the earliest report of our holdings and should be cited as follows:

e.g. 1946-

If the first report in our holdings covers two calendar years, such as 1946-47, cite in this field the year in which it was actually published.

e.g. 1947-

FIELD 15. PAGINATION

If there are important prefatory pages in the book, cite the number of pages in lower case Roman numerals followed by a comma (,) and the total number of pages of the document including bibliographies and indexes in Arabic numerals, followed by the letter p. Do not use brackets or parentheses.

e.g. iv,50p.

For documents that are unpaged, describe as lv. (unpaged), unless it is feasible to count the number of pages in the document. For documents that have complicated or irregular paging, describe lv. (various pagings) unless it is feasible to count the total number of pages in the document.

For phonograph records, indicate the number of records in the set.

For tape recordings, indicate the number of feet on the tape.

(a) Non-bibliographically separate works. Analytics should cite inclusive paging as follows: pp. 19-30. If a document has a number of unnumbered pages, these should also be counted.

e.g. 17p.

For documents that run to more than one volume, only the total number of volumes should be cited as follows: 3v.

(b) Open entries. Since a number of volumes cannot be entered in an open entry until it has ceased publication, this still should be entered by a hyphen (-) followed by a v to designate volume.

e.g. -v.

FIELD 16. DESCRIPTION

This section is for the physical description of a document. Abbreviations of such description are entered in lower case with a period (.), and one space following each one. Examples of descriptions are as follows:

e.g. mimeo.
photos.
illus.
diag.
diagrs.
xerox

Enter playing speed of tapes in this field. Enter RPM's for phonograph records in this field.

FIELD 16. DESCRIPTION (con't)

(a) Microfilms and Microfiche. A note should be added to indicate whether we hold a positive or negative of the microfilm. Use the following designations.

microfilm-pos.
microfilm-neg.
microfiche.
microcard.

FIELD 17. LANGUAGE

This is a note to indicate the language(s) a document is written in. Accepted abbreviations for languages are to be used.

e.g. Eng.
Fr.
It.
Ger.
Sp.

Use as many language abbreviations as necessary Separate two or more language codes with two (2) spaces.

e.g. Eng. Fr.

If the text is in more than one language a conventional note in Field 25 should be made.

e.g. Text in English and French.

FIELD 18. FREQUENCY

This field is for noting the frequency of serial publications. These words should be entered in lower case, followed by a period (.).

e.g. annual.
quarterly.
monthly.

When frequency varies, a simple note to that effect should be made.

e.g. frequency varies.

FIELD 19. SERIES, CONTRACT NUMBER AND REPRINT

(a) Series. If the name of the series is of significance to adult education, add the series note and number of the part in this field. Publishers' series are generally not cited. The note is entered exactly in the form as it appears on an entry and is enclosed in parentheses ().

e.g. (CSLEA. Notes and essays on education
for adults, no.44)

(b) Contract Number. The contract number is used for important government and project reports which may be referred to by their contract number. This information is not entered in parentheses. If follows series after two (2) spaces.

(c) Reprint. A reprint note, if necessary, is added in this field, not in parentheses (). The entry should be as brief as possible, following other entries by two (2) spaces.

e.g. Reprint: Adult leadership, v.28:4 (Oct. 1955).

(d) Microfilms. If microfilmed documents have a microfilm order number or a doctoral dissertation number, enter it in this field in parentheses (), as follows:

e.g. (Mic.60-2657)
(Doc.Dis.Ser.20,078)

NB. Thesis note is not entered in this field but in Field 20.

FIELD 20. THESIS NOTE

This field is for thesis note only and it should be entered in parentheses () in the following form.

e.g. (Ph.D. Thesis, Syracuse University)

Note that the school or department is not entered in this field.

FIELD 21. BIBLIOGRAPHY

Important bibliographies, references or lists of readings should be entered in this field. Cite inclusive pages for the bibliography.

e.g. Bibliography: pp.310-312.

If a specific title is given to a reading list, it may be used in this field within quotation marks (" ").

e.g. "Reference Materials": pp.19-20.

To indicate that lists of references of bibliographies are found at the end of each chapter enter as follows:

For small, not-too-important lists of references and bibliographies enter as follows:

Includes references. or Includes bibliographies.

For substantial and important lists of references and bibliographies, enter as follows:

References at end of each chapter. OR
Bibliographies at end of each chapter.

FIELD 22. PRICE

The retail price of a document should be entered when it can be easily obtained. The dollar sign will be entered automatically by the Flexowriter, so the price should be entered as follows:

e.g. .40..
1.00..

Since price must be entered in American currency, the cost of the document if given in foreign currency, must be changed to the American equivalent.

FIELD 23. SELECTION CODE

The purpose of the selection code is to indicate the kind of information contained in a document and its presentation. It also indicates the depth of analysis and methods of handling the document in the LCE system. The codes and the kind of documents to which they apply follow:

CODE 1.

1. Scope: Applied only to documents with informative, substantive, hard content which are worthy of exhaustive indexing at a high level of specificity for computerized retrieval.

   e.g. Theses, research reports, substantial historical surveys, and informative curriculum materials (old Code Y) are the types of documents intended for this category.

2. Techniques: I -- "Informative abstracting required" (See Abstracting Rules--T-EB-67). 500 words maximum length. Documents should be broken down into sections for separate analysis (analytics), CODE I applied to each section if necessary. Terms I, (Field 28) and Terms II (Field 29) are assigned to documents in this category. See also CODE C, CODE CA, and CODE CO.

3. Use: Documents coded I will enter the computer subsystem, CEA sub-system, and catalogue card sub-system, and therefore require exhaustive indexing.

CODE D.

1. Scope: Applied to useful compendiums of general information, philosophical or ideological essays, general surveys, introductions, and overviews, broad statements of goals and purposes. Generally these documents lack "hard" data.

2. Techniques: D -- "descriptive abstracting required" (See Abstracting Rules, T-EB-67). 200 words maximum limit. Documents should be broken down into sections and CODE D applied to each section requiring descriptive abstracting. Terms I only (Field 28) are assigned to documents in this category.

3. Use: Documents coded D will enter the computer, CEA and catalogue card sub-systems.

CODE C. (Supersedes old CODE D,W,Y; when combined with SUPPLEMENTARY CODE A and O, old WX is replaced.)

1. Scope: Applied to monographs (books, microforms, tapes, etc) but NOT open entries (see CO below)

   CA applied to document when the citation for the whole is to be catalogued, and when sections of the document are to be coded either I or D and enter the computer or CEA sub-systems.

   The sections themselves should be coded either I or D.

   CO applied to open entries for serial publications, such as journals and continuations. The series as a whole is catalogued only, but parts of a given issue may be assigned.

   Code I or D for analysis for entry into the computer and CEA sub-systems.

2. Technique: C -- "cataloguing only required", but see also CA, CO descriptions.

CODE Z.

Information retrieval and staff reference materials. These are catalogued for a separate card catalogue (located in IE) outside all other LCE systems.

FIELD 24. FORM CODES

This code designates the form that the information in the document takes and does not refer necessarily to the physical layout of that document. Codes and what they represent, with explanatory scope notes, follow.

BB	Bibliography. This code is used for bibliographies, bibliographic essays, research overviews, catalogues of documents, such as library catalogues, etc.
BI	Biography. This code is used for biographical studies, documents or tape recordings, interviews with leaders of the field, etc.
CP	Continuations. This code is applied to continuations such as annual reports, journals and periodicals, year books, conference proceedings, etc.
CC	Catalogues. This code is used for catalogues of courses, institutional programs, etc.
DI	Directories. This is used for directories of persons, members of organizations, and for agencies in particular subject areas.
ES	Explanatory statements. This code is used for explanatory statements, surveys, descriptions of programs, surveys and overviews of parts of the field, etc. This covers informational essays as well as factual handbooks of all kinds.
HI	Historical Studies. This is used for historical studies histories of the development of adult education in particular, etc.
IM	Instructional Materials. This is used for all kinds of instructional materials, including textbooks, study discussion materials, study guides, handbooks designed for students in courses, etc.
LD	Legal Documents. Includes laws, statues, constitutions, by-laws.
RE	Research. This code is used for research studies that are controlled, or sustained investigations into a particular subject area.
TE	Theory and Philosophy. This code is used for philosophical and theoretical statements about adult education, theoretical investigations into parts of the field, general aims and objectives. It includes philosophical essays.

FIELD 25. NOTES AND HOLDINGS

This field is reserved for special bibliographic notes of importance, for significant lists of contents, and for library holdings (open entries). Each note should end with a period (.) and two spaces and be followed in one paragraph with other notes. If a document is based on a thesis, but is not itself the thesis and the author is important, then make a note to the effect in Field 25. Notes should be made for open entries concerning important title changes, official organs of journals, "preceded by" and "superceded by" and "ceased publication". General notes precede list of holdings or contents.

(a) Holdings. The following examples will illustrate the form in which library holdings should be cited. All holdings of series or journals, whether open or closed entry, should follow the note "LIBRARY HAS". Designations for volume and number will be used and date of first issue held by the library, if not the first issue of the journal, should be included in abbreviated form. These rules will be illustrated by examples. Note spacing as used in special instances for clarity. See below i,iii.

(i) Annual reports.

e.g. LIBRARY HAS: 1954 - 1958; 1958-62(5yr. report); 1965 -

Note that separate reports covering a span of years are cited 1954 - 1958, indicating calendar year. If such reports are not calendar year, cite as follows: 1953-54 - 1957-58. Separate report years are linked by spaces and a hyphen. Single documents covering 1 or more report years, or one year spanning 2 calendar years are linked by a hyphen with no spaces.

(ii) Journals and periodicals.

e.g. LIBRARY HAS: v.1:3(April. 1954); v.3:4 - v.5; 4,6; v.8 - v.10:1; v.12 -

Note that date of 1st issue, if not first issue published, is cited in parenthesis [()]. For closed entries, cite also date of last issue held, in similar manner.

(iii) Series.

Note no spaces between numerials in listing holdings of series.

e.g. LIBRARY HAS: no.1-7; 9-12; 15-

LIBRARY HAS: Church education; Farm education;

Note that numbers of parts are cited. Titles are cited only when parts are unnumbered.

FIELD 25. NOTES AND HOLDINGS (con't)

(iv) Monographs.

A Contents note is made in caps for listing titles of parts or volumes, when important, and when all parts are held by library.

e.g. CONTENTS: v.1: Labor education in the U.S.; v.2: Labor education in Canada; v.3: Labor education in the U.S.S.R.

FIELD 26. SUBJECT HEADINGS

Tracings for subject headings are entered in this field. The Worksheet has numbered places for a maximum of 4 subject headings. Subject headingsshould be entered in upper case with no period at the end. When a subject heading has a sub-division, follow the first part of the heading with two hyphens (--) and then the sub-division.

e.g. ADULT EDUCATION--NIGERIA

FIELD 27. ADDED ENTRIES (tracings)

Tracings for added entries, such as title, joint author, editor series, etc., are entered here in upper and lower case. The Worksheet has numbered places for a maximum of 4 such entries. Entries should be exactly as they will appear on the added entry catalogue card, and a period (.). For example, do not use the word "Title" to indicate a tracing of title, but type that part of the title which should appear on the title card. Tracing for title in which a portion of the title is omitted is entered as follows: Three dots followed by one space, followed by portion of the title used. Do not capitalize the first letter of word following last dot unless it is a proper name.

e.g. ...adult education centers.

NB. For information about filling in Fields 28 (Terms I), 29 (Terms 2), and 30 (Abstract), consult the Rules for Abstracting (T-EB-67) and Rules for Indexing (in preparation).

TO BE USED WITH T-D-65 (RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING)

General Formatting Rules

March 30, 1966

1. CLOSING UP INFORMATION

In three more instances, we are going to close up information in our citations. This will save space and make a better looking card. In each case, there are a number of small items separated by marks of punctuation.

A. IN DATES	APPLY TO FIELDS
Jan 18-Feb 1, 1964.	5
	6
	10
NOT	19 (Reprint, and From)
	20 (Based on)
Jan. 18 - Feb. 1, 1964.	27
B. IN PAGING	
References: pp.38-39,55,72-73,85.	15
NOT	
References: pp.38-39, 55, 72-73, 85.	

2. ABBREVIATIONS

A. Use the following abbreviations for months and days WITH NO PERIODS.

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Mon Tue Wed Thu Fri Sat Sun

B. Abbreviations of organizations will have NO PERIODS.

ALA CSLEA YMCA

C. ALL abbreviations of geogrpahic areas WILL HAVE PERIODS.

U.S.A. U.S.S.R. N.Mex. Gt.Brit. U.A.R.

RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING

Memorandum: T-D-65 TO: Staff & Files FROM: Edith Bennett March 30, 1966

FIELD 10. FOUND IN (Analytics)

This field is used for citing the whole document in which an analytic is found. Some general and specific rules for analytic entries are given below:

(a) Analytics for bibliographically-separate parts. If a series of separate parts is catalogued as a unit, an analytic for each part must be made, using author or title entry as the main analytic of each part. Note that the place, publisher, date, and pagination should be entered into the appropriate Fields (11,12,13, and 14 and 15) and not be entered in Field 10 as is customary in normal cataloguing.

e.g. Thomas, Alan M
  Adult education. (IN Citizens'
Forum pamphlets.) Toronto, CAAE,
1960.

Note that only the information in parentheses is included in Field 10.

Note also that the word IN is in capital letters and is followed by one (1) space.

(b) Do not enter xeroxed copies or reprints of journal articles in this Field. See Fields 15 and 19.

RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING

Memorandum: T-D-65 TO: Staff & Files FROM: Edith Bennett March 30, 1966

FIELD 11: Place of publication

Place of publication should be the city, followed by the state, province, or country. All names of cities should be spelled out in full, with the exception of the abbreviations St., Ste., Mt.

The two cases in which the country, or state, may be omitted are as follows:

1. When FIELD 12 makes the state clear--e.g. Columbus, Ohio State University.

2. With capital cities of foreign countries outside North America and with certain North American cities, when well-known. N.B. the following:

Toronto
London
Paris
Ottawa
Tokyo
Moscow
Hongkong
Geneva
Rome

Milan
Madrid
New York
Washington
Chicago
San Francisco
Montreal
Vancouver
Mexico City

Authority for abbreviations of states: Library of Congress. Rules for descriptive cataloguing, p.125.

Ala.
Alaska
Ariz.
Ark.
Calif.
Colo.
Conn.
Del.
Fla.
Ga.
Hawaii
Idaho
Ill.

Ind.
Iowa
Kan.
Ky.
La.
Me.
Md.
Mass.
Mich.
Minn.
Miss.
Mo.
Mont.

Neb.
Nev.
N.H.
N.J.
N.M.
N.Y.
N.C.
N.D.
Ohio
Okla.
Or.
Pa.
R.I.

S.C.
S.D.
Tenn.
Tex.
Utah
Vt.
Va.
Wash.
W.Va.
Wis.
Wyo.

We have been warned by the Post Office that abbreviations of foreign countries can be a dangerous practice: so, in bibliographic citations, do not abbreviate them unless they are very well-known. e.g.

Eng. U.S.S.R. Ger.

Memorandum: T-D-65 TO: Staff & Files FROM: Edith Bennett March 30, 1966

With foreign countries, we include our 49th and 50th states and dependencies of the U.S.A.
e.g.
Alaska Hawaii Puerto Rico Guam Virgin Islands Canal Zone

N.B. All abbreviations of geographic areas are to have periods.

RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING

Memorandum: T-D-65 TO: Staff & Files FROM: Edith Bennett March 30, 1966

FIELD 12. PUBLISHER

The name of the publisher is entered in this field, followed by a comma (,).

(a) Commercial Publishers. Enter commercial publishers using accepted abbreviations for name as cited in the Cumulative Book Index and Books In Print. If the name of the publisher included INC., LTD., etc, do not include this phrase as part of the name.

(b) Institutions and organizations. These should be spelled out in full except for certain well-known organizations listed below. When it is important to cite an institution and a sub-division as publisher, cite sub-division first, followed by larger unit.

e.g. Dept. of Extension, University of British Columbia.

The following abbreviations are used to represent agencies when they are publishers. No other agencies may be abbreviated. Do not use periods in abbreviations except as noted in U.S. Dept. of HEW.

NOTE: The word "association" may be abbreviated as "Ass'n" (NO PERIOD) in all fields except 5 and 6.

AAAE	American Association for Adult Education
AEA	Adult Education Association of the USA
AUEC	Association of University Evening Colleges
AVA	American Vocational Association
CAAE	Canadian Association for Adult Education
CSLEA	Center for the Study of Liberal Education for Adults
GPO	Government Printing Office
ICEA	Institut canadien d'education des adults
NAPSAE	National Association of Public School Adult Education
NEA	National Education Association
NSSE	National Society for the Study of Education
NUEA	National University Extension Association
OMAT	Office of Manpower, Automation and Training
UCAE	Universities Council for Adult Education
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAFI	United States Armed Forces Institute
USOE	U.S. Office of Education
U.S. Dept. of HEW	U.S. Dept. of Health, Education and Welfare

(c) Dissertations and theses. For dissertations and theses in hard copy, the publisher is the name of the institution which is granting the degree. The name of the school or department within the institution should be included as part of the publisher, if known.

(d) Microfilms. The publisher of a microfilm or other microform is the publisher of the microform and not the institution under whose aegis the original document was published.

RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING

Memorandum: T-D-65 TO: Staff & Files FROM: Edith Bennett March 30, 1966

FIELD 15. PAGINATION

If there are important prefatory pages in the book, cite the number of pages in lower case Roman numerals followed by a comma (,) and the total number of pages of the document including bibliographies and indexes in Arabic numerals, followed by the letter p. Do not use brackets or parentheses.

e.g. iv,50p.

For documents that are unpaged, describe as 1v. (unpaged), unless it is feasible to count the number of pages in the document. For documents that have complicated or irregular paging, describe 1v. (various pagings) unless it is feasible to count the total number of pages in the document.

For phonograph records, indicate the number of records in the set.

For tape recordings, indicate the number of feet on the tape.

(a) Non-bibliographically separate works. Analytics should cite inclusive paging as follows: pp. 19-30. ALWAYS use complete numerals.

	USE	NOT
e.g.	pp.343-347	pp.343-7
	pp.343-352	pp.343-52
	pp.343-402	pp.343-02

The same applies in Field 19, when citing paging of reprints and xeroxed copies.

If a document has a number of unnumbered pages, these should also be counted.

e.g. 17p.

For documents that run to more than one volume, only the total number of volumes should be cited as follows: 3v.

(b) Bibliographically separate works. When analyzing a reprint or xeroxed copy of a journal article, enter the total pages in this field. To find the total, subtract and add one. Enter specific pages in Field 19.

(c) Open entries. Since a number of volumes cannot be entered in an open entry until it has ceased publication, this still should be entered by a hyphen (-) followed by a v to designate volume.

e.g. -v.

FIELD 16. DESCRIPTION

This section is for the physical description of a document. Abbreviations of such description are entered in lower case with a period (.), and one space following each one. Examples of descriptions are as follows:

e.g. mimeo.
photos.
illus.
diag.
diagrs.
xerox.

Enter playing speed of tapes in this field. Enter RPM's for phonograph records in this field.

RULES FOR BIBLIOGRAPHIC ANALYSIS AND FORMATTING

Memorandum: T-D-65 TO: Staff & Files FROM: Edith Bennett March 30, 1966

FIELD 19. SERIES, CONTRACT NUMBER AND REPRINT

(a) Series. If the name of the series is of significance to adult education, add the series note and number of the part in this field. Publishers' series are generally not cited. The note is entered exactly in the form as it appears on an entry and is enclosed in parentheses ().

e.g. (CSLEA. Notes and essays on education for adults, no.44)

(b) Contract Number. The contract number is used for important government and project reports which may be referred to by their contract number. This information is not entered in parentheses. It follows series after two (2) spaces.

(c) Reprint. A reprint note, if necessary, is added in this field, not in parentheses. Include the specific pages. The entry should be as brief as possible, following other entries by two (2) spaces.

e.g. Reprint: Adult leadership, v.29:4(Oct 1955) pp.143-156.

and in Field 15, put the total paging.

e.g. 14p.

Xeroxed copies. Enter xeroxed copies of journal articles in the same way, using "From:" instead of "Reprint:"

e.g. From: Journal of experimental psychology, v.14:3, pp.241-269.

and in Field 15, put the total paging.

e.g. 29p.

(d) Microfilms. If microfilmed documents have a microfilm order number or a doctoral dissertation number, enter it in this field in parentheses (), as follows:

e.g. (Mic.60-2657)
(Doc.Dis.Ser.20,078)

NB. Thesis note is not entered in this field but in Field 20.

FIELD 20. THESIS NOTE

This field is for thesis note only and it should be entered in parentheses () in the following form.

When analyzing an article which is based on a thesis, enter this information here, (in parentheses) as follows:

(Based on Ph.D. Thesis, University of Colorado)

FIELD 21. BIBLIOGRAPHY

Important bibliographies, references or lists of readings should be entered in this field. Cite inclusive pages for the bibliography.

e.g. Bibliography: pp.310-312.

No quotation marks are to be used in this field.

To indicate that lists of references of bibliographies are found at the end of each chapter enter as follows:

For small, not-too-important lists of references and bibliographies enter as follows:

Includes references. or Includes bibliographies.

For substantial and important lists of references and bibliographies, enter as follows:

References at end of each chapter. OR
Bibliographies at end of each chapter.

FIELD 22. PRICE

The retail price of a document should be entered when it can be easily obtained. The dollar sign will be entered automatically by the Flexowriter, so the price should be entered as follows:

e.g. .40..
1.00..

Since price must be entered in American currency, the cost of the document if given in foreign currency, must be changed to the American equivalent.

APPENDIX 9

DOCUMENT WORKSHEET (6/8/66)

Date Cat	Date Anal	Date Chk	Source Doc
Source Cit	Class No. 1	Access No. 2	Blank 3

Main Entry - Personal

Main Entry - Corporate

Title (Indent 2 spaces) 6

Jt. Author 7

Editor 8

Sponsor 9

Found In 10

Place 11

Publisher 12

Copyright Date 13	**Publication Date** 14
Pagination 15	**Physical Description** 16
Language 17	**Frequency** 18

Series, Contract Number, Reprint 19

28 **Index Terms (I)**

29 **Index Terms (II)**

30 **Abstract & Refs.**

Pagination 15		Physical Description 16	
Language 17		Frequency 18	
Series, Contract Number, Reprint 19			
Thesis Note 20			
Bibliography 21		Price 22	
TC,C 23	Termatrex Number 24		
Notes and Holdings 25			

Subject Headings 26

1
2
3
4

Added Entries 27

1
2
3
4

APPENDIX 10

MEMO: T-DJI-85 Internal Distribution Only FROM: D. J. Ironside Sept. 8, 1966

OUTLINE OF LCE PRESENT CLASSIFICATION SCHEME

Attached you will find a simplified version of our present and provisional classification scheme. I did this for two reasons: 1. To enable all the Literature Analysts to classify the documents they are analyzing, so that there is consistency between the classification code given a document and it's major subject, and 2. To help me in my work on a revised classification scheme for the shelving of documents in adult education.

You will note that I have, in most cases, simply drawn numbers and headings from classification schemes as presently used and have not revised it. In a few cases I have added subject categories that we do not seem to have, and these are marked with an asterisk.

This document is produced for immediate discussion. I suggest that we might consider using these classification codes until such time as we produce a new scheme (within the next year). I suggest also that we do not use the greater detail of the full classification schedule, but stick with these major categories, in so far as possible. Since every unique bibliographic item is getting a distinctive document number, broad classification codes, like broad subject headings, will be entirely adequate for our purpose, I would judge.

I am doing some work now on a classification scheme that looks to be a cross between a faceted scheme and a functional or hierarchically-derived scheme. I plan to push ahead quickly and get something done on paper for us all to discuss in some sustained fashion. Look over this outline and see if you think it will carry us forward satisfactorily for the next couple of months.

Note to Classifiers:

When you are designating a classification code for a document, please watch for the following points:

1. All research or evaluation of a topic or method should be classed with that method and not under Z (research methods). Z should be reserved for documents on research methods, information retrieval, library science, etc..
2. Where there seems to be, at a quick glance, overlap or redundancy in the scheme, I have added a few "see also" notes. These may be redundant due to my faulty understanding of the scheme, we can clarify these points with BJ.
3. The additions that I have made were the ones that came quickly to mind. If there are other serious ones that need a distinctive classification code, please make a note of them for discussion.
4. Watch category E - Liberal Adult Education. I left out great swatches of this class because I simply didn't understand what the categories meant. It may be that all the subjects listed in this class are for content material, which we are not now collecting, or for special study programs or instructional materials in these subjects.

A word of warning. I would strongly recommend that we all avoid the temptation of trying to improve this scheme. The basic work of the scheme was developed for a small working collection in liberal university adult education/and, while fine for that purpose, will not stand the stress of our terms of reference. I found it very difficult when deriving these categories to avoid shifting them around to fit our library better. I think, however, that it would be a waste of time to try to improve it beyond a minimal functioning level.

OUTLINE OF LCE PRESENT CLASSIFICATION SCHEME

MAJOR CATEGORIES

A. EDUCATION

B. ADULT EDUCATION

C. UNIVERSITY A - E -

D. CURRICULUM

E. LIBERAL A - E -

F. SPECIAL AUDIENCE PROGRAMS

G. SPECIAL FORMATS

H. ADULT LEARNING

I. LEADERSHIP

J. TEACHING METHODS

K. TEACHING

L. ADULT EDUCATORS AND FACULTY

M. PARTICIPANTS

N. FINANCE

O. GUIDANCE

P. ADMINISTRATION

Q. PROMOTION

R. PERSONAL PAPERS OF AD-EDUCATORS

S. PROFESSIONAL EDUCATION AND TRAINING

W. WOMEN

Z. RESEARCH METHODS

SIMPLIFIED SCHEME

A

EDUCATION

A1	EDUCATION - AIMS AND OBJECTIVES
A2	REFERENCE WORKS
A21	COMPARATIVE EDUCATION
A5	EDUCATION - ELEMENTARY AND SECONDARY
A52	DROPOUTS
A6	HIGHER EDUCATION
A68	COMMUNITY COLLEGES
A7	FOUNDATIONS - GENERAL
A72	FEDERAL AGENCIES
A73	NATIONAL ORGANIZATIONS IN EDUCATION
A74	STATE ORGANIZATIONS AND FOUNDATIONS
A75	LOCAL ORGANIZATIONS AND FOUNDATIONS
A76	LEGISLATION - EDUCATION
A8	EDUCATION - INTERNATIONAL

B

ADULT EDUCATION

B1	ADULT EDUCATION - GENERAL
B2	ADULT EDUCATION REFERENCE WORKS
* B3	ADULT EDUCATION AGENCIES
B31	ADULT EDUCATION - FEDERAL AGENCIES
B32	ADULT EDUCATION NATIONAL CO-ORDINATING ORGANIZATIONS - U.S.A.
B321	ADULT EDUCATION - PROGRAM AGENCIES
B33	STATE GOVERNMENT ORGANIZATIONS - A - E -
B34	ADULT EDUCATION - LOCAL ORGANIZATIONS (GOV'T & VOLUNTARY)
* B35	URBAN EXTENSION

B

ADULT EDUCATION

B41	ADULT EDUCATION - PUBLIC SCHOOL
B42	ADULT EDUCATION - LIBRARY
B44	DISCUSSION PROGRAMS
B45	ADULT EDUCATION - MASS MEDIA
B5	CHURCH ADULT EDUCATION
B6	INTERNATIONAL ADULT EDUCATION
B63	UNITED NATIONS AND UNITED NATIONS ORGANIZATIONS
B64	INTERNATIONAL AGENCIES IN A - E -
B7	FUNDAMENTAL EDUCATION - SEE ALSO E 352
B71	ADULT BASIC EDUCATION
B72	ADULT BASIC EDUCATION - INSTRUCTIONAL MATERIALS
B73	LITERACY EDUCATION
B8	ADULT EDUCATION IN COUNTRIES ABROAD
B81	AFRICA
B83	ASIA
B84	AUSTRALIA AND NEW ZEALAND
B85	CENTRAL AMERICA AND CARRIBEAN
B86	CANADA
B87	LATIN AMERICA
B88	EUROPE
B884	GREAT BRITAIN
B888	SCANDINAVIAN NATIONS
B89	SOUTH EAST ASIA

C

UNIVERSITY ADULT EDUCATION

C1	UNIVERSITY ADULT EDUCATION
C2	U - A - E AGENCIES
C4	LAND-GRANT COLLEGES AND STATE UNIVERSITIES - PROGRAMS
C49	PRIVATE COLLEGES PROGRAMS
C6	INTERNATIONAL COLLEGES AND UNIVERSITIES
C7	RESIDENTIAL ADULT EDUCATION - UNITED STATES
C8	RESIDENTIAL ADULT EDUCATION - INTERNATIONAL
C9	ADULT EDUCATION LEGISLATION

D

CURRICULUM PROGRAMS

D1	CURRICULUM
D11	SPECIAL DEGREE PROGRAMS

E

LIBERAL ADULT EDUCATION

E1	LIBERAL EDUCATION
* E11	LIBERAL ADULT EDUCATION - PROGRAMS
E3	SOCIAL SCIENCE - GENERAL
E320	CIVIC EDUCATION
E323	CIVIL RIGHTS
E33	ECONOMICS
E338	WORK, AUTOMATION AND CONSUMER EDUCATION
E339	CONSERVATION
E342	UNITED NATIONS
E35	PUBLIC ADMINISTRATION

E

LIBERAL ADULT EDUCATION

E352	COMMUNITY DEVELOPMENT, URBAN RENEWAL (SEE ALSO B7)
E356	MILITARY SCIENCE - CIVIL DEFENSE
E362	INTEGRATION
E365	PENALOLOGY
E392	THE FAMILY
E45	LINGUISTICS
E5	SCIENCE
E79	RECREATION AND LEISURE
E89	READING

F

SPECIAL AUDIENCE PROGRAMS

F1	ALUMNI EDUCATION
F2	INDUSTRY - EDUCATION
F3	ETHNIC GROUPS - EDUCATION
F5	GOVERNMENT EMPLOYEES - EDUCATION
F7	LABOR EDUCATION
F8	MANAGEMENT - EDUCATION
F10	PARENT EDUCATION
F11	PENAL INSTITUTIONS - EDUCATION
F12	PUBLIC AFFAIRS EDUCATION
F13	PROFESSIONAL EDUCATION (SEE ALSO S)
F15	RURAL AND MIGRANT EDUCATION
F16	VOCATIONAL REHABILITATION, RETRAINING
F161	VOCATIONAL EDUCATION
F18	AGED - EDUCATION

F

SPECIAL AUDIENCE PROGRAMS

F19	VOLUNTARY ACTION
F21	CITIZENSHIP EDUCATION
F22	CO-OPERATIVES - EDUCATION

G

SPECIAL FORMAT

G1	CONFERENCES - CONVENTION MEETINGS
G2	CORRESPONDENCE STUDY
G4	FORUMS
G5	EDUCATIONAL TELEVISION
G6	WORKSHOPS
G9	FILMS

H

ADULT LEARNING AND NEEDS

H1	ADULT LEARNING - ABILITY
H4	ADULT CHARACTERISTICS
H5	AGING AND AFFECTS ON LEARNING- AGE DIFFERENCES
H6	AGING
* H8	EDUCATIONAL MEASUREMENT
* H9	LEARNING THEORIES

I

LEADERSHIP

I1	LEADERSHIP
I4	LEADERSHIP - GROUPS AND DISC. GROUPS
I7	LEADERSHIP TRAINING

J

TEACHING METHODS (SEE ALSO G)

J1	TEACHING METHODS
J4	GROUP DISCUSSION
J5	GROUP DYNAMICS
J6	PROGRAMMED INSTRUCTION

K

TEACHING

K1	TEACHING

L

ADULT EDUCATORS AND FACULTIES

L1	ADULT EDUCATORS AND FACULTY

M

PARTICIPANTS

M1	PARTICIPANTS AND STUDENTS
M12	PARTICIPANTS CHARACTERISTICS
M4	STUDENT NEEDS
M6	PARTICIPANT DATA - ENROLLMENT, ETC.
M7	STUDENTS - SCHOLARSHIP - FELLOWSHIPS - GRANTS - LOANS

N

FINANCE

N1	FINANCE - FEDERAL AND STATE AID
* N5	EDUCATIONAL AID
* N6	TECHNICAL ASSISTANCE

O

GUIDANCE

O1	GUIDANCE
O2	CAREER INFORMATION - CAREERS AND OCCUPATIONS
O4	GUIDANCE TESTS

P

ADMINISTRATION

P1	ADMINISTRATION - GENERAL
P4	PHYSICAL FACILITIES
P5	ADMINISTRATION - EDUCATION

Q

PROMOTION AND PUBLICITY

Q1	PROMOTION
Q2	PROMOTION - TECHNIQUES

R

PERSONAL PAPERS

S

PROFESSIONAL EDUCATION AND TRAINING (SEE ALSO F13)

S1	PROFESSIONAL EDUCATION AND TRAINING
S3	PROFESSIONAL TRAINING IN ADULT EDUCATION
* S6	PROFESSIONAL TRAINING FOR SPECIFIC GROUPS

W

WOMAN

W1	WOMEN
W4	WOMEN - INTERNATIONAL
W5	EDUCATION OF WOMEN
W6	EMPLOYMENT OF WOMEN
W8	PARTICULAR PROGRAMS FOR WOMEN

Z

RESEARCH METHODS

Z1	RESEARCH METHODS
Z2	ADULT EDUCATION RESEARCH METHODS
Z6	INFORMATION RETRIEVAL AND DOCUMENTATION

CANADIAN ASSOCIATION FOR ADULT EDUCATION

113 ST. GEORGE ST., TORONTO 5, CANADA/WA. 3-3519

September 1, 1961

THE CAAE RESEARCH LIBRARY
in
ADULT EDUCATION

The Canadian Association for Adult Education has been collecting books, pamphlets, reports and reprints in the field of adult education - its theory, methods and practice - for 25 years. This collection of materials is now one of the most significant on this continent in adult education. In late 1955, the Association began to organize this material into a special library for the use of its staff, colleagues and research workers.

Progress was steady but slow until in 1960 a grant from the Atkinson Charitable Foundation of Ontario permitted the CAAE to concentrate its efforts on Library re-organization and consolidation for a year. Now, more than half-way through the grant period, it seems appropriate to describe some of the procedures used in this special library in adult education. It is hoped that this description will be of interest generally to librarians and possibly of some use to adult education institutions setting up libraries or files of background documents.

A. THE CLASSIFICATION

Initially, the Librarian spent considerable time examining various library classification systems in order to determine whether any of the existing schemes were suitable to the developing field of adult education or whether it would be advisable to take the drastic step of devising a special scheme. Points considered at this time were:

a) The expense of changing one's mind after work had begun on library organization.

b) The advisability of adopting a scheme familiar to scholars in North America and to Canadian librarians generally.

c) The necessity of using a scheme that allowed for expansion as this special field of knowledge developed.

d) The desirability of using a recognized scheme rather than a specially devised one so that possibilities of communication and co-operation with other educational libraries and with non-English librarians would be enhanced.

The schemes considered were Dewey, Library of Congress, Universal Decimal Classification (Brussels), the classification adopted by Thomas Kelly in his Select bibliography of adult education in Great Britain (National Institute of Adult Education, Great Britain, 1952) and Bliss. Dewey, L.C. and U.D.C. were the serious contenders for reasons mentioned above.

The U.D.C. was finally chosen as the scheme allowing most flexibility and through its unique auxiliary apparatus of connection and relation notations, providing the widest range of "special point of view" indexing. Although the U.D.C. is not used very widely in North America, it is quite intelligible to users familiar with the Dewey Classification, on which, of course, is is based. It is more widely used in other parts of the world and, for some time to come, will probably be the best communicator through language barriers of any scheme in existence.

A complete description of the U.D.C. would obviously be out of place here. An abridged English edition was first published in 1948, and revised in 1957. It is this 2nd edition that has been used in CAAE.

It is worth noting, however, the three basic principles which underlie the U.D.C. These are (and I quote from the Introduction to the Schedules):

(i) It is a classification in the strictest sense, depending on the analysis of idea content, so that related concepts and groups of concepts are brought together.

(ii) It is a universal classification in that an attempt is made to include in it every field of knowledge ... as an integrated pattern of correlated subjects. This universality at the conceptual level is supported by notational devices, which permit the linking together of simple main numbers (for simple ideas) either with other main numbers or with auxiliaries denoting Place, Time and similar commonly recurring categories - in each case forming combined or compound numbers.

(iii) It is a universal decimal classification, constructed on the principle of proceeding from the general to the more particular by the (arbitrary) division of the whole of human knowledge into ten main branches, each further sub-divided decimally to the required degree.

It might be useful to give at this point a few notes on those auxiliary notations and symbols (referred to in (ii) above) that have made the U.D.C. particularly suitable for grouping materials from the adult educator's point of view. In the list of subject headings (numerical) used in our subject classified catalogue, which will be found in this document, main numbers combined with these auxiliary symbols are not listed for the sake of brevity. All of these symbols have been used satisfactorily, however, in the classification of materials and in the subject headings, as the examples below will indicate.

B. AUXILIARY NOTATIONS

1. Addition sign

The + (plus) sign is used to connect two or more separated (non-consecutive) U.D.C. numbers to denote a concept for which no single comprehensive number exists.

e.g. 972 + 980 Central and South America

2. Extension sign

The / (stroke) sign means "from ... to ..." and is used to join the first and last of a series of consecutive U.D.C. numbers, denoting a range of concepts which collectively form a broad subject for which no single number exists.

e.g. 362.7/8 Child and youth welfare (equivalent to 362.7 + 362.8)

3. Relation sign

The : (colon) sign, most important of the connecting symbols, is used generally to link two or more U.D.C. numbers denoting related concepts of (approximately) equal value. The numbers may be reversed, in a classified list, to ensure separate entries for the co-ordinate ideas.

e.g.	374:01	Adult education - Bibliography (reversed as 01:374)
	37.7:78	Education in Music (reversed as 78:37.7).

N.B. These three signs +, /, and : are included in the list of subject headings in this document, as they are of considerable importance.

4. Common auxiliaries of Form (0...)

These serve to distinguish the form (generally) in which the subject denoted by the preceding main number is presented. The (06) group have been given a particular meaning in CAAE usage which is explained below.

The most useful of the form auxiliaries are:

(042)	Addresses, lectures, speeches
(051)	Periodicals
(058)	Yearbooks, annuals
(058.7)	Directories
(075.5)	Course prospectuses, curricula
(082)	Series, sets
(085)	Catalogues
(091)	Historical presentation.

The (06) group has been particularly useful to indicate groups of agencies or individual institutions, so that material relating to an agency can be filed in relation to the subject with which that agency is concerned. A few examples will illustrate this point.

e.g. 37(71) Education - Canada
37(71)(061) Canadian Education Association

e.g. 378.13 University adult education
378.13(71)(062) Canadian Association of Directors of Extension and Summer Schools.

The rules for the (06) form auxiliaries are as follows:

Use (06) and its sub-divisions to represent a group of, or individual, organizations, agencies and institutions; as follows:

(a) (06) Used to indicate a group of agencies where the actual number does not represent such a concept.

e.g. 301.427:37 number for Parent Education
301.427:37(06) " " Parent Education Agencies
However, 374.92 " " Adult Education Councils
(Do not use (06) to represent a group, if the number already represents it.)

(b) (061) Used to represent a particular government agency.

e.g. 31 number for Statistics
334(71)(061) " " Dominion Bureau of Statistics

(c) (062) Used to represent a voluntary agency.

e.g. 334 number for Co-operatives
334(71)(062) " " Co-operative Union of Canada

(d) (063) Used to represent conferences or meetings, etc.

e.g. 341.14 number - UNESCO
341.14(063) number - UNESCO - Conferences

(e) (064) Used to represent a theatre or festival.

e.g. 792 number - Theatre
792(71)(064) number - Stratford Theatre & Festival

(f) (065) Used to represent a business or corporation.

e.g. 665.6 number - Petroleum
665.5(065) number - British American Oil Co.

N.B. Form numbers (b) to (f) are not used in the following instances:

061.2 - foundations
341.12 - League of Nations
341.13 - United Nations
341.14 - Unesco
341.15 - Colombo Plan
341.17 - NATO
378.4 - individual universities; sub-divided geographically, then alphabetically.
374.9 - individual adult education co-ordinating agencies; sub-divided geographically, then alphabetically.
374.91 - individual adult education program agencies; sub-divided geographically, then alphabetically.

Numbers for Royal Commissions; e.g. 33(71)R - Royal Commission on Canada's Economic Prospects.

N.B. A complete list of Form Auxiliaries will be found in the U.D.C.

5. Common auxiliaries of Place (1/9)

These serve to indicate the geographical range of the subject denoted by the preceding main number. If the geographical aspect is very important, an added subject entry (for a classified catalogue) may be made under the auxiliary, which then precedes the main number.

e.g.	374(42)	Adult education - Great Britain.
	37(73)	Education - U.S.A.
	378(47)	Higher education - U.S.S.R.

Place auxiliaries are usually used with names of agencies.

e.g.	37(71)(061)	Canadian Education Association
	061.2(73)K	Kellogg Foundation

N.B. A complete list of Place Auxiliaries will be found in the U.D.C.

6. Common auxiliaries of Point of view .00...

These auxiliaries are never used alone, but always added to a main number to indicate the broader aspects of the subject. These auxiliaries are used sparingly in CAAE. The following are the only ones used:

.001.4	Standards
.001.5	Research
.001.6	Surveys

e.g. 374.001.5 Adult education - Research.

....

There are also Language, Time and Special analytical subdivisions provided for in U.D.C. which as yet have not been used in CAAE.

C. Expansions of the U.D.C.

It has been necessary to expand certain sections of the U.D.C., or to re-locate certain subjects, in order to accomodate the many aspects of adult education into the schedules. The changes made are listed below, under the main class number.

Although no claim is made for the quality of these changes, it has been found that the revised schedules do group material satisfactorily from our point of view. It is emphasized, however, that none of the schedules listed below should be used without constant reference to the U.D.C. schedules themselves.

(a)	159.9	PSYCHOLOGY (see also U.D.C)
	.92	Developmental psychology
	.921	Psychology of adult maturity
	.953	Learning theories
	.98	Counselling and therapy

see also 37.015 Educational psychology

(b)	302	HUMAN RELATIONS & GROUP RELATIONS
	.1	Group Relations
	.12	Group Dynamics
	.15	Group Work
	302.2	Leadership
	.21	Training courses in leadership
	.22	Role-playing
	302.3	Group discussion
	.31	Group discussion Guides (content)
	.32	Group discussion Projects (alphabetize)
	302.4	Conferences
	302.5	Workshops
	302.6	Meetings
	302.7	Committees
	302.8	Program Planning
	.81	Program materials & directories
	.85	Evaluation of programs - principles & techniques
	302.9	Public Speaking
	.95	Debates

(c) 341.13 UNITED NATIONS

For U.N. Associations, use geographical form number and form auxiliaries.

e.g. 341.13(71)(062) U.N. Association in Canada

.132	Charter
.133	General Assembly
.134	Security Council
.134.1	Security Council Committees (alphabetize)
.135	U.N Secretariat
.135.1	U.N. Administrative Tribunal

341.136	Technical Assistance Administration
.137	Trusteeship Council
.138	Economic & Social Council
.138.1	U.N. High Commissioner for Refugees (UNHCR)
.138.2	U.N. Children's Fund (UNICEF)
.139	The Specialized Agencies; use sign of relation for individual agencies.
e.g. 341.139:331	International Labour Organization (ILO)
341.139:613	World Health Organization (WHO)
341.139:63	Food & Agriculture Organization (FAO)
341.14	United Nations Educational, Scientific & Cultural Organization (UNESCO)
.141	Unesco Projects (alphabetize)
e.g. 341.141 EW	East-West Project in International Understanding.
341.15	Colombo Plan
341.17	North Atlantic Treaty Organization (NATO)

(d) 374 ADULT EDUCATION

For general material only. For special aspects of the subject, use specific numbers throughout schedules, as indicated in Numerical Index. Sub-divide geographically; e.g. 374(54) Adult Education - India.

.01	Philosophy & theory, aims & purposes
374.1	Organization & administration
374.2	Adult Education - Methods
374.3	Teaching of adults
.31	Lyceums & forums
.32	Chautauquas
374.4	Correspondence Study for adults
374.5	Rural adult education
.51	Agricultural Extension See also 63:37 Agricultural Education
374.6	
374.7	Professional training in adult education
.71	Adult Education Profession - Character & development of
374.8	Residential adult education
.81	Folk Schools
.82	Summer Schools - for summer schools of Canadian Universities, file with the individual university,
374.9	Individual adult education agencies - co-ordinating & planning - Sub-divide geographically, then alphabetically, using initial letter of name to distinguish them when necessary.
.91	Individual adult education agencies - Program & operating. - Sub-divide as in 374.9 - Use (06) to indicate a group, if necessary.

	374.92	Adult education Councils - Do not use (06) to indicate a group of agencies as the number represents a group.
	.94	State (government) and adult education - Use (061) to indicate an individual agency.
	.95	Public School adult education - For material on public and high school courses, etc., organized by local or provincial boards and departments of education.
(e)	375	CURRICULUM
	.1	Liberal education
(f)	378	HIGHER EDUCATION - See also U.D.C.
	.13	University adult education
	.131	Evening colleges
	.15	Post graduate study
	.18	Students
	378.3	Scholarships & bursaries
	.35	Study abroad
	378.4	Individual universities - Use (06) to indicate a group. - Sub-divide as in 374.9
	379	Education & the State
	.12	Education & finance
	.12:374	Education & finance in Adult & Higher Education
	379.2	Illiteracy
	.25	Fundamental education
(g)	652.2	RADIO & TELEVISION
	.2:37	Radio & Television - Education
	.21	Broadcasting Corporate Bodies & agencies - Sub-divide by country, then use form auxiliaries (061) and (062). Alphabetize where necessary.
	.24	Audience Research
	.26	Radio & TV - Programming
	654.3	Radio
	.3:37	Radio & Education
	.3:372	Radio in Elementary Education
	.3:374	Radio in Informal adult Education
	.3:378	Radio in Higher Education
	.34	Effects of Radio on special types of audiences
	.35	Radio - Production & Direction
	.36	Radio - Programming
	.37	Technical
	.39	History
	654.4	Television
	.4:37	Educational Television - Sub-divide as in 654.3:37

	654.44	Effects of TV on special types of audiences
	.45	TV - Production & Direction
	.46	TV - Programming
	.47	Technical
	.49	History
(h)	791.4	FILMS
	791.4	General material.
		- Use geographic Sub-divisions
	.4:02	Films & Libraries
	.4:2	Films & Religion
	.4:37	Films & Education
	.4:37(063)	Film Workshops & forums
	.4:37.7	Film Utilization & projection
	.4:372	Film in elementary education
	.4:374	Film in informal adult education
	.4:378	Film in higher education
	791.41	Corporate bodies
		- Use (06) and sub-divisions and geographic sub-divisions as required.
	e.g.	791.41(062)(42) British Film Institute
	.412	Film societies
	.413	Film Councils
	.414	Festivals & Awards
	.416	Research
	791.421	Documentary film
	.424	Films & Children
	791.43	Economics of the industry
	791.44	Law in relation to film
	.446	Film censorship
	791.45	Production
	.46	Distribution
	.47	Exhibition
	.475	Film audiences
	.478	Equipment
	.479	Preservation
	791.49	History of the film

N.B. This Schedule for 791.4 is a very much modified and simplified version of the schedule drawn up by the British Film Institute in 1954, subsequently revised for use in the Canadian Film Institute. Copies of the complete schedule for 791.4 may be available from the Canadian Film Institute.

D. THE ORGANIZATION OF THE CAAE LIBRARY

(a) The Materials: Consists of books, pamphlets, tape-recordings, films and journals on the Philosophy, Methods and experiments (Practices) in adult education, in Canada and abroad.

Books - Classified and catalogued. Author-Title Catalogue contains all added entires. Classified Subject Catalogue (U.D.C.) and Subject Index.

Pamphlets -

(a) Main Collection - Classified only, and housed in a classed sequence in Vertical Files.

(b) Retired Collection - Classified only, and housed in folders in a separate Vertical File.

(c) Archive Collection - Catalogued and classified as books. Housed in Vertical Files in a separate sequence, or in pamphlet boxes.

N.B. An alphabetical Subject Index is point of entry to Classified Catalogue and Classified Vertical Files.

Periodicals -

(a) Bound journals catalogued. Current issues kept in a Vertical File under title.

(b) Unbound journals kept in Vertical File by title. Accumulations of back issues catalogued and shelved in boxes with bound journals.

Films and tapes -

Catalogued and classified (simply) in a Film-Tape Catalogue.

All books, journals and pamphlet boxes are shelved, the journals and pamphlet boxes in a separate sequence. Uncatalogued pamphlets are classified and housed in classified vertical files; catalogued pamphlets are housed in a vertical file in a separate classed sequence. Pamphlet continuations, such as conference reports, annual reports and series, that are catalogued are shelved in pamphlet boxes rather than in a vertical file.

(b) The Catalogue: The catalogue and the cluster of files around it are described briefly below.

(i) Author-Title Catalogue - contains entries under author (main entry) title, series and any other added entries required, filed in one alphabetical sequence. Library of Congress cards are used for books when possible. Includes entires for books, catalogued pamphlets and journals; pamphlets on green cards and journals on buff cards.

(ii) Classified Subject Catalogue - Subject entries are made for books, catalogued pamphlets and journals, and are filed in classed sequences, using U.D.C. notations as subject headings. The subject notation is added to the left upper corner of card above call number. Entries are filed numerically; then alphabetically by author.

(iii) Subject Index - This is the key to the classified catalogue, and to the classified vertical files; it performs for the Catalogue and the vertical files the same function that the relative index serves for the U.D.C. It provides direct access to the pamphlets in the Classified Vertical Files, and indirect access to the catalogued materials through the Subject Catalogue. It is an alphabetically arranged list of terms and their synonyms, descriptive of the contents of the materials classified in the catalogue and in the Vertical Files, together with the U.D.C. notation which represents the subjects. The index also includes the names of all important agencies which are represented in the classified vertical files

(iv) Numerical Index - The file is in effect a subject authority file, as it records each class number used in the classified catalogue and in the Classified Vertical Files, together with a record (tracing) of all verbal headings in the Subject Index that refer to each class number. It is in effect the alphabetic subject index in reverse, and ensures that any change in a subject heading (numerical) will be traced through all its appearances in the Subject Index.

(v) Shelf-List - A list, filed by call number of all catalogued items in the Library. A record of all added entries made for an item (tracings) is kept on the shelf card as well as on the author (main) entry.

(vi) Film-Tape Catalogue - not yet compiled, but will probably be a Title and Subject Catalogue, filed separately from other entries.

E. A LIST OF SUBJECT HEADINGS (NUMERICAL)

In order to explain the use of the U.D.C. and its application to a classified subject catalogue and to classified vertical files more clearly, it has been decided to list here all main subject notations with their verbal explanatory headings. This will give the reader also a fairly exact idea of the range of the CAAE Library.

Most of the auxiliary notations are not included in the list for the sake of brevity. The + (plus), / (stroke) and : (colon) signs, however, are included when they are used because they are more significant than the other auxiliaries (of Place, Form, and Point of View).

Any main or compound number, however, can be sub-divided by the auxiliaries, depending on the degree of detail required.

001	Knowledge in General
002	Documentation & Information
006	Communications Arts
006.1	Mass Communications & Media
006.1:37	Mass Media & Education
008	Civilization, Culture, Progress
009	The Arts & The Humanities
01	Bibliography
02	Libraries
02:31	Library Statistics
02:37.7	Librarianship & Training
02:374	Libraries & Adult Education
023	Library Staff
025.3	Cataloguing & Indexing
026	Special Libraries
027.4	Public Libraries
027.53	Regional Libraries
028	Reading
028:37	Reading & Education
028:37.7	Reading - Study & Teaching
028.5	Reading - Elementary
028.8	Readers' Guidance
028.9	Reading Habits & Tastes
03	Encyclopedias & Dictionaries
059	Almanacs, Calendars
061	Organizations & Agencies
061.2	Foundations
069	Museums
069:37	Museums & Education
07	Journalism
1	Philosophy
1:5	Philosophy & Science
130.2	Philosophy of Civilization
159.9	Psychology
159.9:355.1	Psychology & Armed Forces
159.9:355.292	Psychology & Veterans
159.913	Mental Health
159.92	Developmental Psychology
159.921	Psychology of Adult Maturity
159.922.7	Child Psychology
159.953	Learning Theories
159.955	Conception, Judgment, Thinking
159.97	Abnormal Psychology
159.973	Retardation & Mental Deficiency
159.98	Counselling & Therapy
159.98:355.292	Counselling & Veterans
164	Symbolic Logic
165.9	History of Knowledge
167	Scientific Inquiry
17	Ethics & Morals
174	Professional Ethics & Business Morality

181	Oriental Philosophy
2	Religion
2:3	Religion & The Church in Society
2:369.4	Religion & Youth
2:37	Religion & Education
2:374	Religion, The Church & Adult Education
22	Bible
24	Religious Life
242	Meditations
282	Roman Catholic Church
285	Presbyterian Church
3	Social Sciences
301	Sociology & Public Affairs
301.15	Social Psychology
301.152	Group Consciousness, Ideology
301.153	Public Opinion
301.23	Cultural & Social Change
301.33	Communities
301.33:302.2	Communities & Leadership
301.33:371.2	Community & School Relations
301.33:374	Communities & Adult Education
301.34	Community Organization
301.341	Community Councils
301.342	Community Centres
301.35	Rural Communities
301.35:2	Rural Communities and the Church
301.35:37	Rural Communities & Education
301.36	Urban Communities
301.42	Family
301.426	Marriage & Marriage Counselling
301.427	Parent-Child Relationship
301.427:37	Parent Education
301.427.1	Adolescents
301.45	Minorities & Ethnic Groups
301.451	Indians & Eskimos
301.451:37	Indians & Eskimos & Education
301.452	Jews
301.452:37	Jews & Education
301.453	Negroes
302	Human Relations
302:01	Human Relations - Bibliography
302.1	Group Relations
302.1:374	Groups & Adult Education
302.12	Group Dynamics
302.15	Group Work
302.2	Leadership
302.21	Leadership - Training Courses
302.22	Role Playing
302.3	Group Discussion
302.31	Group Discussion Guides
302.32	Group Discussion Projects
302.4	Conferences
302.5	Workshops
302.6	Meetings
302.7	Committees

302.8	Program Planning
302.81	Program Materials & Directories
302.85	Evaluation
302.9	Public Speaking
302.22	Technical & Economic Assistance
309.23	Planning - Regional & Community
312	Population
32	Political Science
321.7	Democracy
323.31	Upper Class, Nobility
323.33	Working Class
325.1	Immigration
325.254	Migration of People
327	International Affairs
327:37	International Affairs Education
327(71):973	Canadian-American Relations & Studies
329	Political Parties & Movements
33	Economics
330.148	Capitalism
331	Labour
331.021	Kinds of labour, occupations
331.1	Industrial Relations
331.3	Child Labour
331.4	Labour - Women
331.6	Unemployment & Public Assistance
331.61	Measures for Relief of Unemployment
331.75	Professional Workers
331.85:37	Labour Education
331.85:373.6	Labour & Vocational Training
331.88	Labour Unions
332.13	Banks
332.73	Credit Unions
334	Co-operatives
334:01	Co-operatives - Bibliography
334:37	Co-operatives & Education
334.5	Consumer Co-operatives
334.7	Voluntary Action
335.5	Communism
338.92	Automation
339.4	Consumption of Wealth
339.41:37	Consumer Education
339.5	Conservation
341.1	International Co-operation
341.12	League of Nations
341.13	United Nations
341.13:01	United Nations - Bibliography
341.13:37	United Nations & Education
341.13:971	United Nations & Canada
341.136	United Nations Technical Assistance Administration
341.138.1	United Nations High Commissioner for Refugees (UNHCR)
341.138.2	United Nations Children's Fund (UNICEF)
341.139:331	International Labour Organization (ILO)

341.139:613	World Health Organization (WHO)
341.139:63	Food & Agriculture Organization (FAO)
341.14	United Nations Education, Scientific & Cultural Organization (UNESCO)
341.14:01	UNESCO - Bibliography
341.14:971	UNESCO & Canada.
341.14:973	UNESCO & U.S.
341.141 EW	UNESCO Major Project - East-West Understanding
341.15	Columbo Plan
341.17	North Atlantic Treaty Organization (NATO)
341.38	Re-establishment & Demobilization
342.5	Government
342.537	Parliamentary Procedure
342.6	Citizenship
342.6:37	Citizenship Education
342.6:37:325.1	Citizenship Education & Immigrants
342.7	Human Rights & Constitutional Liberties
342.7:37	Human Rights & Education
342.722	Civil & Political Equality
342.724	Racial Equality & Discrimination
342.727	Freedoms - Individual, Speech & Press
342.8	Electoral Law & Systems
343.2	Criminal & Penal Law, Punishment
343.8	Penology
343.8:37	Penology & Education
343.85	Penology & Social Welfare
343.915	Juvenile Delinquency
35.08	Public Administration & Civil Service
351.71	Public Properties, Work, Revenue
352	Local Government
354.12	Government of Colonies
355	Military Sciences
355.1:159.9	Armed Services & Psychology
355.1:37	Armed Services & Education
355.292	Veterans
355.292:159.9	Veterans & Psychology
355.292:159.98	Veterans & Counselling
355.292:37	Veterans & Education
355.45	Defence
36	Social Welfare
36:37	Social Welfare & Education
361.7	Community Chests & Trusts
361.9	Fund-Raising & Charitable Giving
362.4	Rehabilitation - Disabled
362.6	Old Age
362.6:01	Old Age - Bibliography
362.6:331	Old Age & Labour & Retirement
362.6:331.2	Old Age & Social Security & Welfare Services
362.6:37	Old Age & Education
362.6:79	Old Age & Recreation & Social Clubs
362.7/8	Child & Youth Welfare
368.042	Compulsory Insurance
368.06	Health Insurance Plans
368.3	Life Insurance

369.4	Youth & Youth Movement
369.4:2	Youth & Religion
369.4:37	Youth & Education
37	Education
37:01	Education - Bibliography
37:31	Education Statistics
37.01	Education - Philosophy & Theory
37.015	Educational Psychology
37.1	Education - Organization & Administration
37.7	Professional Training in Education
37.7:159.913	Education in Mental Health
37.7:3	Education in the Social Sciences
37.7:5	Education in Science
37.7:613	Education in Health & Hygiene
37.7:654.2	Education in Radio & Television
37.7:78	Education in Music
371	Teaching Profession
371.048	Vocational Guidance
371.1	Teachers - Management
371.3	Teaching
371.33	Audio-Visual Education
371.33:374	Audio-Visual Education & Adults
371.333	Aural Aids
371.34	Filmstrips & Filmslides
371.9	Education of Special Categories of Pupils
372	Elementary Education
373	Secondary Education
373.6	Technical Education
374	Adult Education
374:002	Adult Education - Documentation
374:01	Adult Education - Bibliography
374:31	Adult Education Statistics
374.01	Adult Education - Philosophy & Theory
374.1	Adult Education - Organization & Administration
374.2	Adult Education - Methods
374.3	Teaching of Adults
374.31	Adult Education - Forums & Lyceums
374.32	Chautauquas
374.4	Correspondence Study
374.4:378	Correspondence Study in Universities
374.5	Rural Adult Education
374.51	Agricultural Extension
374.51:01	Agricultural Extension - Bibliography
374.7	Professional Training in Adult Education
374.71	Adult Education Profession
374.8	Residential Adult Education
374.81	Folk Schools
374.82	Summer Schools
374.92	Adult Education Councils
374.94	State & Adult Education
374.95	Public School Adult Education
375	Curriculum
375.1	Liberal Education
375.1:657	Liberal Education & Business & Industry

378	Higher Education
378:01	Higher Education - Bibliography
378:31	Higher Education Statistics
378.13	University Adult Education
378.13:331	Universities & Labour Education
378.131	Evening Colleges
378.15	Post-Graduate Study
378.152	Alumni Education
378.18	Students
378.3	Scholarships & Bursaries
378.35	Study Abroad
379	State & Education
379.12	Education & Finance
379.12:374	Education & Finance in Adult & Higher Education
379.2	Illiteracy
379.23	Compulsory Education
379.25	Fundamental Education
395	Etiquette
396	Women
396:37	Women & Education
397	Primitive Peoples
401	Philosophy, Origin & Development of Language
407	Languages - Study & Teaching
407(42)	English Language - Study & Teaching
407(44)	French Language - Study & Teaching
408.9(42)	Basic English
408.92	Esperanto
415.4	Etymology, Semantics
420	English Language - Readers
5	Science
5:1	Science & Philosophy
5:37	Science & Education
501	Exact Sciences in General
539.1	Nuclear, Atomic & Molecular Physics
572	Antropology, Ethnology
575	Genetics, Heredity
61	Medical Sciences
613	Health & Hygiene
614	Public Health
614.2	Nursing
614.2:37	Nursing Education
63	Agriculture
63:37	Agricultural Education
64:37.7	Home Economics - Study & Teaching
643	Housing
654.2	Radio & Television
654.2:37	Radio & Television & Education
654.24	Radio & Television Audience Research
654.3	Radio
654.3:37	Radio & Education
654.3:372	Radio in Elementary Education
654.3:374	Radio in Informal Adult Education
654.36	Radio - Programming
654.4	Television

654.4:37	Educational Television
654.4:372	Educational TV in Elementary Education
654.4:374	Educational TV in Informal Adult Education
654.4:378	Educational TV In Higher Education
654.46	Television - Programming
655	Printing & Publishing
657	Business & Industry
657:37	Business & Industry & Education
657:37.7	Business & Industry - Training & Teaching
658	Management - Business & Industry
658:37	Management Education
658.17	Corporate Giving
658.3	Management - Personnel Practices
659.1	Public Relations & Advertising
659.13	Public Relations & Advertising Media
676	Paper & Pulp Industries
7	Art & Art Galleries
7:37	Art & Education
711.4	Town Planning
72	Architecture
72:374	Architecture & Adult Education
745	Handicrafts & Industrial Arts
745.5	Handicrafts - Specific
75	Painting
778.5	Cinematography
779	Photograph Exhibitions
78	Music
78:37	Music & Education
79	Recreation
79:352	Recreation & Government
79:37.7	Recreation - Training & Leadership
79.13	Leisure
791.4	Films
791.4:02	Films & Libraries
791.4:37	Films & Education
791.4:37(063)	Film Workshops & Forums
791.4:37.7	Film Utilization & Projection
791.4:374	Films in Informal Adult Education
791.412	Film Societies
791.413	Film Councils
791.414	Film Festivals & Awards
791.421	Documentary Film
791.424	Films & Children
791.446	Film Censorship
791.45	Film Production
791.46/47	Film Distribution & Exhibition
791.475	Film Audiences
791.478/479	Film Equipment & Preservation
792	Theatre
792:37	Drama & Theatre & Education
792:37.7	Theatre - Study & Teaching
793.3	Folk Dancing & Games
796	Sports
796.4	Physical Training
796.54	Camping

8:01	Literature - Bibliography
8-4	Literature: Addresses, Essays, Lectures
8-8	Quotations, Aphorisms, Proverbs
8.08	Literary Technique - Writing
820	English Literature
820(71)	Canadian Literature
820(714)	French-Canadian Literature
87	Classical (Lating & Greek) Literature
910.2	Travel
910.2:37	Education & Travel
912	Maps
92	Biography
92:371	Collective Biographies - Teachers
92:374	Collective Biographies - Adult Educators
930	Historical Sciences
930.1	History as a Science - Philosophy & Theory
930.26	Archaeology, Antiquities
930.85	History of Civilization
94	Mediaeval & Modern History
940	Europe
940.3	World War I, 1914-1918
940.53	World War II, 1939-1945
941	Commonwealth of Nations
942	Great Britain
943	Germany
947	Union of Soviet Socialist Republics (U.S.S.R.)
948	Scandinavia
948.5	Sweden
948.9	Denmark
95	Asia
95:37.7	Education in Asian Studies
952	Japan
954	India
956	Israel
96	Africa
968	South Africa
97	North America
971	Canada
971.1/2	Western Canada
971.1	British Columbia
971.2	Northwest Territories
971.23	Alberta
971.24	Saskatchewan
971.27	Manitoba
971.3	Ontario
971.3T	Toronto
971.4	French Canada
971.4M	Montreal
971.4Q	Quebec City
971.5	New Brunswick
971.6	Nova Scotia

971.7	Prince Edward Island
971.8	Newfoundland
972+980	Central and South America
972.9	West Indies
973	United States
993.1	New Zealand
994	Australia

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As a final observation on the organization of CAAE's Library, the Librarian wishes to emphasize the importance of using a system that embraces general, as well as specialized, materials. Every adult education library, even a highly specialized collection in a university extension department will require a range of fringe subjects which are not encompassed usually in specially devised schemes. The foregoing list of subject headings (numerical) will indicate the range of subjects that CAAE has considered important to have represented in its collection.

Compiled by Diana J. Ironside
Librarian and Information Officer

September 1, 1961.

STAFF MEMO ON KYLE CLASSIFICATION

APPENDIX 12

TECHNICAL MEMORANDUM: T-D-1 Notes on the Kyle Classification for the Social Sciences

TO: STAFF AND FILES   FROM: D. J. IRONSIDE   DATE: DEC. 21, 1964

I have just read two reports that Barbara Kyle of Aslib produced under the National Science Foundation Grant for designing a special classification scheme to cover the whole field of social sciences based on up-to-date principles of classification as far as possible. When Kyle says the whole field of social sciences, she is referring particularly to the subject areas of four bibliographies that the International Committee of Social Sciences Documentation publishes annually in sociology (social or behavioral sciences) economics, political science, and social anthropology. She did not send us a complete set of the schedules and I gather that these are unavailable. In her last report dated May 1964, she says that she is preparing a revised copy of the draft classification schedules and index for publication if she has the time. I shall write to her and explain in some detail what we are doing and see if we can't get copies right away of some of the schedules at least.

I think we ought to study this classification in some detail. Kyle bases her scheme on the faceted approach, working full time for three years with an assistant from 1955-1958. As I said, the purpose of this scheme was to try and find something more satisfactory for arranging the entries and indexes in these four published bibliographies than in a classified catalogue. The tests that were run on the schedules as noted in these reports were to the alphabetical index (indexing terms) to the classified citations (classification scheme). The principle of chain indexing was followed in the early stages, but in her final report, she agrees with Cleverdon that using permuted entries either in the bibliography or in the alphabetical indexes to them, gives better retrieval more consistently than does chain indexing. I remember Cleverdon making reference to the drawbacks to chain indexing in one of his WRU reports and I have been wracking my brain ever since I read that report to remember the reference. I think we should look this up.

Kyle's breakdown of her subject areas, her use of retro-active notation, and her provision for syntax by a prescribed order and a number of relational symbols such as (capitol letters, lower case letters, digets, digets in brackets, colon:stroke/) is very interesting. I think a close examination of her principles and applying this knowledge to the NIAE's faceted scheme for adult education would be quite illuminating and I plan to do this right away. Kyle's work in these reports and other things of hers that I have read in the past, convince me that she is an extremely competent expert in the area of classification and has probably produced a highly rational and comprehensive scheme that will prove superior to the NIAE's scheme.

At the moment, I am tempted to suggest that we carry on with coding of bibliographic citations and indexing using terms in documents but don't worry about any kind of hierarichal restraint on the indexing terms whatsoever. I'd like to investigate using a faceted approach to the problem of generic searching and this is something that could be applied later. I think we should investigate whether the Bureau of Ships is continuing to use McMurray's simple hierarichal restraint on their co-ordinate indexing system.

FACETS: THE RUTGERS SEMINAR ON FACETED CLASSIFICATION SCHEME AND DISCUSSION WITH WESTERN RESERVE ON A FACETED THESAURUS

MEMORANDUM: T-D-33 TO: Staff & Files FROM: D.J. Ironside March 10, 1965

This day and a half seminar was concerned almost entirely with the work of the British Classification Research Group in designing faceted classification schemes. Vickery prepared a preliminary working paper which, most unfortunately, the Rutgers people did not circulate in advance. It would have allowed for a much more useful design of the seminar had they done so. I have not yet read this paper in detail, but it seems to be an expanded version of Vickery's book on faceted classification. He gave a very clear exposition of the thinking behind the Research Group's interest in the faceted classification schemes and the steps required to build the schedules and apply them in indexing and in searching. I won't now go into the technical details of the paper, but will say that I feel this is a very logical, cohesive, and "intellectually buyable" approach to subject analysis that is compatible with a manual system. During this initial exposition, Vickery did not talk about machine application of the system but simply explained the theoretical aspects of applying it to a classified catalogue, with an alphabetical index based on the chain indexing concept.

My original interest in faceted classification as a means of controlling vocabulary and providing generic searches of the file still holds up and this is the essence of Western Reserve's interest in it. As we have realized heretofore, the semantic code approach is in essence a faceted approach. This gives rise to the possibility of classification out of a fairly conventionally derived thesaurus which would allow us to establish a manual library and a mechanized library at various levels of comprehensiveness and expensiveness.

In our discussions at Western Reserve we found that they have not completed their thesaurus design. Their problems appear to be concerned with the method of attacking the grouping of the terms and it is on this question that Vickery was helpful. Western Reserve is planning to cooperate with Jonkers in the collection of terms and building of a thesaurus and we agreed that we should cooperate with them at various stages in designing the thesaurus, so that adult education can be built into the overall framework. It appears to me that the way we can best assist them is to design some major categories for adult education so that they can learn what we require in the field of continuing education and can incorporate this into their overall design. As is perhaps inevitable, they keep tripping over the problems of how such a thesaurus will be applied, although this problem is not in their purview at the moment. Part of this problem is academic at the moment and will not affect the actual grouping of concepts and terms in the thesaurus.

It was generally agreed that the thesaurus would consist of a classified or faceted grouping of terms (something like a classification schedule) and an alphabetical glossary of terms with references to the major facet in which each term appears. We finally agreed that it was all right if many terms appeared in more than one facet, as will be inevitable given the character of language. Vickery, or perhaps Foskett, will be helpful in commenting on the first draft, I think.

Roger and I both feel now that the Western Reserve Thesaurus will likely contain nearly 90% of the terms that we will require. It is not at all clear, of course, that the overall structure of the facets will meet our needs and this is the area in which we must offer help, advice and criticism. I think our responsibility now is clear. Let us try within the next month to get an outline of a facet scheme organized and send it to them to help them in problems of initial design.

A CLASSIFICATION SCHEME
FOR
ADULT EDUCATION

Introduction and schedules compiled by
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National Institute of Adult Education

35, Queen Anne Street, London, W.1.
November, 1962.

A CLASSIFICATION SCHEME FOR ADULT EDUCATION.

Purpose

This scheme is primarily designed to provide an expandable arrangement for the present and future stock of the library of the National Institute of Adult Education. Some recent developments in library classification have been taken into consideration. The construction is based upon the 'facet formula' theory of S.R. Ranganathan.

It is hoped that this classification will not only place present information about adult education on a more logical basis, but will reveal more clearly, by analogy, the gaps in this field of knowledge where research should be promoted. Owing to the development of new libraries of adult education in the Commonwealth and elsewhere, this scheme is published with an explanation and short notes for its possible adaption for other libraries.

The basic construction

When preparing this classification scheme, the stock of the library of the National Institute of Adult Education was surveyed. The literature shows various characteristics by which it might be divided. The five main ones are (1) the kind of persons being educated i.e. educands (2) the methods or problems of their education (3) the country where the work is carried out (4) the organisation doung the work (5) the form in which the information is presented.

The literature is divided using each of these characteristics in turn. After division by the first characteristic i.e. educands, such classes as adult education of blind persons, workers, women, etc are obtained, as well as one class covering adult education of undifferientiated persons. The total classes produced by division by a single characteristic is called a 'facet'. If the division is by the characteristic of educands, the facet might be called 'educands facet'. An individual class produced as a result of this division is called a 'focus'. The formula educand ÷ method ÷ country ÷ organisation ÷ form is known as a 'facet formula'.

How the order of application of the characteristics is obtained.

The order of application of the characteristics of division has been carefully considered. It has been decided that all information about work with special classes of people should come together regardless of the teaching methods employed, the country where the work is carried out, the organisation doing it or the form of presentation of the information. The 'educand' facet (W) is therefore the primary facet. The second facet in order of importance is the 'methods facet', which in this case includes mass media, learning situations and teaching aids (K to T). Works about each particular medium or method much be brought together. Country and form of presentation are only of possible secondary importance. e.g. Role-playing might be used in Great Britain or the USA but it would be role-playing the reader would be primarily interested in, the country might not even be considered. Bibliographies, indexes etc. exclusively referring to radio or theatre would be required with works on these subjects rather than with other bibliographies or indexes on other subjects.

Problem of the wide variety of work and organisation of adult education in different countries.

There now remain a number of works descriptive of the history of adult education and the present work in various countries by various organisations. The field covered is not only that of adult education but also of education in general, sociology and community development. Nor can these subjects be separated easily. They overlap with adult education and with each other. The separating factor is rather the various societies and their environment i.e. the country. Branches of social and educational work are more dependent for their organisation and development upon similar aspects of the work in the same country than the same branch of the work (supposing that it exists) in other countries. e.g. In some countries adult education and community development are part of the same movement. In Southern Italy they are combined in the work of UNLA, and are more closely related than community development in Italy is related to community development in Great Britain for instance. It thus may be seen that owing to the variety of institutions, organisations, history and stages of development of adult education in different countries and also its links with social and other work in the same country, division must, next, be primarily by country and afterwards by type of work or organisation. This has been carried out in classes, D, F, G and J.

Differential facets

Although Classes D, F & G may be used for comparative studies they are, at present mostly used for sub-division under country numbers after J. In the present version they are biased towards British education and are used in the Institute library mainly for sub-division under J2. An attempt has been made to list, or leave provision for, all sub-divisions that may be needed for any country whether they are sub-divisions common to most countries, (which may alone be used for comparative studies e.g. Faf - Universities,) or those peculiar to certain countries e.g. Fib - Mechanics Institutes and Fil - Public Schools. (It should be noted that these will only be used for sub-division under the country to which they apply, and would not in any case come together as they appear in the schedule. The country division J will come first with the country number and these will be used as sub-divisions afterwards) e.g. J2 - Mechanics Institutes in Great Britain. J60 Fil-Public Schools in the USA.

The list of sub-divisions in D, F and G may be expanded to cover any aspect required for anywhere in the world. If, however, the list becomes too long and unmanageable it may be better to form a series of 'differential facets' i.e. a set of sub-divisions each suited to a different country. The same notation could be used in each case but the sub-divisions for each country would not be confused as they would always be preceded by J and the country number. Division by country first, and then by 'differential facets' is possibly part of the solution to the classification of the work of adult education in various countries.

Terminology

Connected with this latter problem of classification is that of terminology. Various kinds of institutions which are often the same in many ways (rarely are they exactly the same), in different countries are denoted by quite different terms, which do not indicate any similarity at all. Conversely many institutions denoted by the same term are widely different. e.g. Evening Institutes in Great Britain and Public Schools in America are, as far as financial support is concerned, administered in much the same way, partly by Local Authorities and partly by the State. Evening Colleges on the other hand are part of the extra-mural work of Universities in the USA and it is mis-leading to confuse them with Evening Institutes in Great Britain. Students will not be able to see any connections between similar institutions in various countries if they have ~~different~~ names as the literature on these will be separated by country in the classification scheme. Therefore the catalogue must be used to show these connections. Such entries as the following might be inserted.

Evening Institutes. Great Britain see also Public Schools. USA.
Evening Colleges. USA. see also Tutorial Classes. Great Britain.

Difficulties in placing particular aspects.

Because of the complexity of the history of adult education, several areas of knowledge were difficult to place. A particular example is the history of Mechanics' Institutes and Polytechnics. Although at first this appears to be part of the history of the working class and technical education it may be found on closer examination that these institutions were rather the forerunners of the modern Evening Institute and they have been placed as such. To cover any doubt a 'see also' reference should be made in the catalogue from Workers' Education and Technical Education to the names of these institutions.

Reference and Theoretical works

Books on theory and philosophy of the whole subject form another group Be to Bem. Bibliographies, indexes and periodical lists etc., also covering the whole subject will be placed B to Bas. Periodicals, although often filed separately on the shelves may be classified with the subjects they cover in bibliographies or catalogues and sub-divided Bac.

Principle of inversion

In the schedule the sequence of the facets is in reverse order from that of the formula. This is known as the 'principle of inversion' the purpose of which is to place general items before more specialised items in the final arrangement. The order of application of the characteristics is not however reversed.

Marginal subjects

The marginal subjects such as sociology, community development, psychology, technical and vocational education and the mass media cannot strictly be termed branches of adult education. In some cases these subjects are discussed in relation to adult education (phase relation) e.g. psychology for adult educationists (bias phase); or influence of television upon adult education (influence phase). In other cases these marginal items are general treatises on the particular subjects which will be of interest to and will be required by those who study adult education. Instead of being placed in separate sectionsof their own as would happen if a general scheme were used for this special library, they have been fitted in as an integral part of this scheme. Psychology has become one of the foci of the methods facet; sociology and community development have been considered as special branches of work in various countries, and technical and vocational education have been inserted as part of the education of the young worker, in the educands facet. In each case they have been placed as near as possible to the aspect of adult education to which they seem nearest allied. Because these classes are not formed by directly applying the facet formula to the subject field of adult education as in the case of the other classes, it may not always be suitable that the other characteristics of the formula should be applied to form sub-divisions for these classes, although the country numbers may be used anywhere in the schedule if required for division by country. Other sub-divisions of these marginal subjects should be individually dealt with if the number of documents becomeslarge enough to warrant it. Gaps have been left in the notation for these individual sub-divisions. As an adult education library would,however,only cover a small part of these subjects further sub-division may not be necessary. No attempt has been made to cover the whole of these subjects

The notation

There are 16 main sections in the schedule. In order to keep the final notation as brief as possible these should each be given a single indicative symbol. Because, with arabic numerals, only ten single symbols i.e. 0 to 9 can be obtained, capital roman consonants are used, providing a possible 21 places (if Y is included) H, V, X, Y and Z are not needed at present but may be used for new marginal subjects later. A capital consonant is used throughout the scheme when a new facet is cited. The second letter is a lower case vowel, and allows for twenty one more places. These three symbols form a pronounceable syllable, which is easy to say, read, write and remember. Gaps are left throughout for expansion, further letters possibly a vowel and then another consonant may be added to form other places after each place already identified by three symbols.

Country numbers

The countries facet, for which the symbol is J, has so many sub-divisions and could have so many more that to avoid difficult letter combinations, arabic numerals are used. J is only prefixed to the country number when dividing according to the facet formula. When a country or nationality is required elsewhere in the schedule e.g. Taq - Languages the number only is used. e.g. Taq 17 - The teaching of the French language, but Wac J17 - The teaching of blind people in France. Expand by using numbers omitted, then by decimalisation as in the Dewey Decimal Classification.

How to classify with the scheme

If the item for classification reflects only the educand facet e.g. adult education for women, it is placed in the W class (at Wup). If a subject reflects only the methods facet e.g. a learning situation such as educational travel, it would be classified at To. These are simple subjects. A subject which reflects two or more facets is called a compound subject e.g. Educational travel for young people Wo Ro. The characteristics in order of the facet formula are applied to this subject. It reflects the primary (i.e. educands facet). It is therefore in main class W and sub-divided by R. Any subject in this field may be analysed to show two, three or more facets or phases which here have been used in the same way as facets. The facets are then cited in reverse schedule order and this forms the class number. When several works all have the same class number they may be filed in alphabetical order of author, unless otherwise stated e.g. at Do Biography where they are in alphabetical order of biographee. Do not classify by the index which is intended only as a finding guide to the schedules.

Subject cataloguing with this scheme

There are two methods of subject cataloguing with a faceted scheme. The first is the 'chain index' method used in a classified catalogue which is the more economical as far as the number of entries is concerned. The catalogue would consist of three files (1) a classified file, with full entries for each item in classified order (2) an alphabetical author and title and publisher index (3) a chain index of subjects, relating to the classified file, constructed as follows:-

Each facet must be indexed, so that whatever facet of the subject the reader looks for in the file, he will ultimately find what he requires, e.g. Use of discussion in teaching small groups of women.

Groups: Discussion: Women Wup Sel Re

Discussion: Women Wup Sel

Women: Wup

The classified file should be adequately guided. The main class is Wup but whichever facet the reader looks up he will be led to the correct main class in the classified file, followed by the sub-divisions of that class. No further index entries would be needed for other items in the same classes covered by these index entries.

The second method, which may be more conveniently used in a card catalogue, requires subject entry for each item under each subject heading, but ultimately saves the time of the reader, as a ready-made bibliography on cards may be found under each facet. A full catalogue entry is made out and this is duplicated the required number of times. (unit card method) The various headings required are typed on the top of each 'unit' card. A subject heading is made for each facet by rotating the terms so that each comes to the front in turn:

Groups: Discussion: Women Wup Sel Re

Discussion: Women: Groups Wup Sel Re

Women: Groups: Discussion Wup Sel Re

These subject entries may then be filed in with author, title and publisher entries forming a dictionary catalogue.

See also notes under 'Terminology'.

Adaption of the scheme for other adult education libraries

1. The order of the characteristics of division is suited primarily to the library of the National Institute of Adult Education. If the requirements of the collection are slightly different the order of the facets in the formula may be changed. This would alter the order of the main classes, but, in fact, would only necessitate the changing of the initial consonants of the class marks of the schedule.

2. The order of the foci in each facet i.e. 'order in array' might be altered in certain places if necessary. (See also note on 'differential facets') In the present version it is in 'favoured category' order.

3. The country numbers are in an order which is suited to a British library but the countries may be relisted and renumbered accordingly if the scheme were to be used in an overseas library.

4. The notation is only a mechanical device for keeping the classes in order, should Roman letters be unsuitable for any reason, another notation may be applied to the same arrangement.

5. Marginal subjects may be omitted altogether if this scheme is used for part of a library of wider scope. e.g. a library of education.

Conclusion

This scheme may be regarded as experimental. It has been used in the Institute library and the following facts have emerged in the course of the work:-

1. The characteristics of division are almost certainly the essential ones.

2. Their order of application might be debatable but the use of the country as the first characteristic by which to divide the historical and descriptive works is unavoidable if any clear classification is to be made at all. Previous attempts to divide by the organisation first have resulted in confusion. (see also above 'differential facets').

3. There are possibly many alternative locations for the marginal subjects although only one has been given in this scheme.

4. As it is helpful to the reader and suitable for future development a clear general pattern in the scheme is more important than a 'place for everything'. Most of the headings given in the scheme, however, need to be used and may later need further sub-division. Many items would be lost if placed in broader groups.

5. Most works tend to be general in coverage, or descriptive of institutions. Many are single faceted. There is a considerable lack of writings on specific practical aspects except for a few good works from Canada and the USA. This statement applies to the stock of Library of the National Institute. Classes P, Q, and S might be re-arranged and developed by experiments in a library which holds more of these works.

Further reading

Mills, J. A Modern Outline of Library Classification. London, Chapman & Hall, 1960, 196pp.

Foskett, D.J. The London Education Classification. Education Libraries Bulletin. No. 14, Summer 1962. pp.6-7.

Brief examples showing the use of the scheme

REFERENCE WORKS.

Mezirow, J.D. and Berry, D. The literature of liberal adult education. 1957.	B
Librarians of Institutes of Education British education index. 1961.	Baf

PHILOSOPHICAL WORKS

Lindeman, E.C. The meaning of adult education. 1961	Be
Ranganathan, S.R. Education for leisure. 1954	Beo

INTERNATIONAL ASPECTS AND COMPARATIVE STUDIES

World Conference on Adult Education Proceedings. 1929	C Bas
International directory of adult education. UNESCO. 1952	Dik
Peers, R. Adult education, a comparative study. 1958	Dil

HISTORY, DESCRIPTION OF ADULT EDUCATIONAL WORK ETC. IN VARIOUS COUNTRIES

Wells, M.M. and Taylor, P. The new law of education. 1954	J2 Dad
National Institute of Adult Education Adult education in 1962.	J2 Dik
Kelly, T. Outside the walls, sixty years of university extension in Manchester. 1950.	J2 Fag
Edwards, H.J. The evening institute. 1961	J2 Fig
Lyche, J. Adult education in Norway. 1957	J5 Dil
Petersen, R. and Petersen, W. University adult education. (USA) 1960.	J60 Fag

CULTURE AND THE MASS MEDIA.

Williams, R. Britain in the sixties, communications. 1962.	Ka
Standing Conference on Television Viewing. Provision and purpose, conference, 1961.	Kam Bas
Great Britain, Ministry of Education. The structure of the public library service in England and Wales, 1959.	Kid J2

ADMINISTRATION

Great Britain. Ministry of Education. Organisation and finance of adult education in England and Wales. 1953.	La J2
Adult Education Association of the USA. Architecture for adult education. 1957	Lad
Library Association. Design in the library. 1960.	Lad Kid

PERSONNEL

Great Britain. Board of Education. Report on recruitment, training and remuneration of tutors. 1922	M J2

STUDENTS

Gould, J.D. The recruitment of adult students. 1959.	N

PSYCHOLOGY

Weschler, D. The measurement and appraisal of adult intelligence. 1958.	Pel

TEACHING METHODS

Adult Education Association of the USA. How to teach adults. 1955.	Qa
Loosely, E. Residential adult education. 1960.	Ri

TEACHING AIDS

Powell, L.S.
A guide to the use of visual aids. 1961. Se

Lee, R.E.
Getting the most out of discussion. 1956 Sel

TEACHING OF PARTICULAR SUBJECTS

Harvard, J.
Teaching adults to speak a foreign language. 1961. Taq

Cameron, J.M.
The teaching of philosophy to adult students. 1951. Tav

Browne, E.M.
Drama in adult education. 1936. Tok

TEACHING METHODS FOR SPECIAL CLASSES OF PEOPLE

Laubach, F.C. and Laubach, R.S.
Toward world literacy. 1960. Wec

Siegle, P.E.
New directions in liberal education for executives. 1958. Wic Ta

Sadler, M.E.
Continuation schools in England and elsewhere. 1907. Wip

National Institute of Adult Education.
Liberal education in a technical age. 1955. Wis

UNESCO
Women and education. 1953. Wup

McCall, C.
Women's Institutes. 1943. Wup F

THE SCHEDULES

Summary

B	Reference works, theory
C	International aspects
D,F,G	Comparative studies
J	Description of work in various countries
K	Mass Media
L	Administration
M	Personnel
N	Students
P	Psychology
Q	Teaching methods
R	Learning situations
S	Teaching aids
T	Teaching of particular subjects
W	Special classes of people

B	Bibliographies
Bab	Periodical lists
Bac	Periodicals
Baf	Indexes
Bak	Glossaries and dictionaries
Bap	Research
? —Bas	Conferences
Be	Theory, aims and philosophy of education and adult education
Beb	Leisure, education for a fuller life
Bek	Religious ideals in education
Bem	Adult education for citizenship, democracy
C	International cooperation and other aspects in education and adult education
Ce	International organisations
Ceb	World Association for adult education
Ci	UNESCO
D	Comparative studies
DFG	Use for sub-division under country, and also for comparative studies of special aspects
Dab	Reports to governments, official reports of commissions (education)
Dac	Parliamentary debates (education)
Dad	Laws affecting education
Daf	Statutory rules and orders, instruments (education)
Dag	Ministry circulars and memoranda (education)
De	History of education, comprehensive
Deb	Early history of education 18th and 19th century
Dec	Interwar period
Ded	Educational directories and year books
Def	Modern educational developments
Dek	Secondary and higher education
Del	Further education
Dib	Reports of commissions (adult education)
Dic	Debates in parliament affecting adult education
Did	Laws affecting adult education
Dif	Statutory rules and orders, instruments (adult education)
Dig	Ministry circulars and memoranda (adult education)
Dik	Adult education directories and year books
Dil	Adult education description and history
Dip	Local studies of adult education
Do	Biography, in alphabetical order of biographee, but place with particular subject when this can be defined and sub-divide Do.

F	Organisations and associations (Use as sub-division under various aspects and then divide alphabetically by name of organisation)
Fa	State in adult education, work of Ministry of Education
Fab	National coordinating bodies
Fac	Voluntary bodies
Faf	Universities
Fag	Extra mural work
Fah	Evening colleges (USA)
Fak	WEA and University work, tutorial classes
Fal	WEA
Faz	Folk High Schools
Feb	Residential adult education
Fec	Long term
Fed	Short term
Feq	Summer schools, educational camps
Feh	ESA AMD ECA
Fej	Junior Community Colleges (USA)
Fib	Mechanics Institutes
Fic	Working Men's colleges
Fig	Early Polytechnics
Fih	Local Education Authorities, Boards of Education
Fij	Evening Institutes
Fil	Public Schools (USA)
Fim	Clubs for working men
Fin	Literary and philosophical societies, lyceums
Fip	Forums
Fob	Religious organisations
Foc	Roman Catholic
Fod	Church of England
Fof	Non-conformist
Foh	Jewish
Fov	National Adult School Union
Fow	Chautauquas
Fut	Trusts and Foundations
G	Sociology
Gab	Social surveys
Gac	Social Services
Geb	Community development
Gec	Community clubs and centres
Gic	Urban areas
Gid	Suburbs and new housing estates
Gif	Rural areas
Gig	Rural adult education
Gih	Village colleges and other country colleges
Gik	Village and rural clubs
Goc	Agricultural extension
God	Agricultural colleges
Gol	Land grant colleges
Goz	Technical assistance, mechanisation

J

1	Europe
2	United Kingdom
3	Scandinavia
4	Denmark
5	Norway
6	Sweden
7	Finland
8	Greenland
9	Iceland
10	W. Germany (or Germany as a whole)
11	Austria
12	Benelux countries
13	Belgium
14	Belgium and Netherlands
15	Netherlands
16	Luxembourg
17	France
18	Switzerland
19	Spain
20	Portugal
21	Italy, Sicily and Sardinia
22	Other Mediterranean countries
23	Greece and Islands
24	British Commonwealth
30	Australasia
31	Australia
39	Tasmania
40	New Zealand
50	Canada
60	USA
70	West Indies
75	Central America,Mexico,Latin America
76	South America
77	Asia
78	China
79	Hong Kong
80	Japan
85	Pacific Islands
86	Malaya
87	Ceylon
88	India
90	Pakistan
91	Burma
95	Middle East
100	Africa
101	Rhodesia and Nyasaland
102	Ghana
103	British W. Africa
104	Gambia
105	Sierra Leone
106	Nigeria
107	British E. Africa
108	Kenya
109	Tanganyika
110	Uganda
111	Zanzibar,Seychelles, Mauritius
112	High Commission Territories
113	Union of South Africa
114	North Africa
115	North E. Africa
116	USSR
117	E. Germany
118	Czechoslovakia
119	Hungary
120	Rumania
121	Yugoslavia
122	Poland
123	Ukrain
124	Central Asian Republics

K	Culture and the mass media
Kal	Radio
Kam	Radio and television
Kat	Films
Keb	Entertainment
Kec	Theatre
Keg	Concerts
Kej	Gramophone recitals
Kep	Arts festivals
Ki	Self educational books
Kib	Books, newspapers and other informational publications
Kic	Reading tastes
Kid	Libraries
Kis	Book supply to adult classes
Kit	Library extension work
Ko	Libraries, museums and art galleries
Kob	Museums and art galleries
Kom	Special exhibitions

La	Administration of education and adult education
Lab	Finance
Lac	Publicity
Lad	Buildings and accommodation
Lam	Regional cooperation
Lap	Administration of individual educational centres and organisations
Le	Administration of social work and community development
Li	Administration of community development

M	Personnel
Mab	Selection, recruitment and training
Mac	Training methods
Meb	Salaries and conditions of service
Mib	Professional associations

N	Students, recruitment, selection surveys
Na	Scholarships and bursaries
Nal	Mature students, degree courses, credit and non-credit courses
Neg	Counselling and guidance
Nel	Careers of students after course

P	Psychology
Pa	Developmental psychology
Pam	Human relations
Pe	Psychology of adult maturity
Pel	Mental ability of adults
Pem	Intelligence tests
Pi	Learning theories, educational psychology
Pib	Adult educational psychology

Q	Teaching methods
Qe	Leadership methods

Ra	Learning situations
Rab	Classes
Rel	Forums
Re	Groups
Reb	Workshops
Rec	Meetings
Reg	Conferences
Rep	Clubs
Ri	Residence
Ril	Summer schools
Ro	Travel - overseas students
Rob	Private study
Rol	Correspondence schools

S	Teaching techniques and aids used in more than one learning situation
Sab	Text books
Sag	Written work
Sak	Standards and marking
Se	Audio visual aids
Sel	Discussion, debate, public speaking and expression
Sen	Discussion guides
Si	Role playing

T	Curricula planning
Ta	The arts, liberal education, humanities
Tal	Classics
Tam	English language, essay style, how to write
Tap	Reading speed and efficiency
Taq	Modern languages (foreign, divide by country numbers)
Tar	Literature (Divide by country numbers)
Tav	Philosophy
Taw	Religion
Te	Psychology
Teb	Science and Mathematics
Tec	Social sciences
Tel	History
Tem	Local studies, social and historical
Tep	Civic education, citizenship, politics, (see also Theory at Bem)
Tez	International relations
Tib	Law
Tic	Economics
Tid	Consumer education
Til	Geography
Tok	Drama and elocution, amateur theatricals
Tol	Music and drama, opera
Ton	Music
Top	Fine arts, visual arts
Tu	Crafts
Tuh	Housecraft, domestic science (see also Women Wup)
Tun	Hobbies
Tup	Health - education (see also community development)
Tur	Sports and physical training

W	Special classes of people
Wac	Blind
Waf	Hospital and sanitoria patients
Wag	Mental hospital patients
Wal	Prisoners and offenders
Web	Illiterates
Wec	Illiterates in newly developing countries, fundamental education
Wed	Minorities, ethnic groups, immigrants and emigrants and prisoners of war
Wib	Alumni, graduates
Wic	Professional people, executives
Wig	Unemployed
Wik	Workers, industrial
Wik F	Cooperative education, Trade Unions
Wip	Young workers, apprentices and trainees, day continuation education
Wis	Technical, vocational and liberal education compared
Wit	Technical, vocational, business and commercial education
Wo	Youth
Wol	Armed Forces
Wor	Ex-servicemen
Wot	Seafarers
Wu	Older people, retirement
Wud	Parents
Wup	Women

Accommodation Lad
Administration La
Africa J100
Agricultural colleges God
Agricultural extension Goc
Aids for teaching S
Aims of education Be
Alumni Wib
Amateur theatricals Tok
Anglican organisations Fod
Apprentices Wip
Armed Forces
Art galleries Kob
Arts K
Arts festivals Kep
Arts, teaching of Ta
Arts, teaching of Fine Top
Asian Republics J124
Associations F
Audio-visual aids Se
Australasia J30
Australia J31
Austria J11
Belgium J13
Benelux countries J12
Bibliographies B
Biography Do
Blind Wac
Boards of Education Fih
Bodies F
Books, cultural reading Kib
Book supply to adult classes Kis
Books, use of text- Sab
Britain J2
Buildings Lad
Bursaries Na
Business education Wit
Camps, educational Feq
Canada J50
Careers of students Nel
Centres, administration of Lap
Ceylon J87
Chautauquas Fow
China J78
Church of England organisations Fod
Citizenship, theory Bem
Citizenship, teaching of Tep
Civic education, teaching of Tep
Classes, teaching to Rat
Clubs, teaching to Rep
Clubs, working men's Fim
Colonies, British J24
Commercial education Wit
Commissions, adult education Dib
Commissions, education Dab
Commonwealth, British J24
Community clubs and centres Gec
Community Colleges (USA) Fej
Community development,
administration Le
Community development,
description Geb
Comparative studies D
Concerts Keg
Conferences, description Bas
Conferences, methods Reg
Consumer education Tid
Cooperation, International C
Cooperation, Regional Lam
Correspondence schools Rol
Counselling students Neg
Crafts, teaching of Tu
Credit courses Nal
Culture K
Curricula planning T
Czechoslovakia J118
Debates, methods Sel
Debates on adult education,
Parliamentary Dic
Debates on education,
Parliamentary Dac
Degree courses Nal
Democracy, theory Bem
Denmark J4
Dictionaries Bak
Directories of adult education Dik
Directories of education Ded
Discussion Sel
Discussion guides Sen
Domestic Sciences, teaching of Tuh
Drama, teaching of Tik
Economics, teaching of Tic
Economics, teaching of Home Tuh
Educational Centres Association Feh

Educational Settlements Association Feh
Elocution, teaching of Tok
Emigrants Wed
English Language, teaching of Tam
Entertainment Keb
Ethnic groups Wed
Europe J1
Evening Colleges (USA) Fah
Evening Institutes Fij
Executives Wic
Exhibitions Kom
Ex-servicemen Wor
Extension, agricultural Goc
Extension, library Kit
Extension, university Fag
Extra-mural work see Extension
Festivals, Arts Kep
Films Kab
Finance Lab
Finland J7
Fine Arts, teaching of Top
Folk High Schools Faz
Forces, Armed Wol
Forums, description Fip
Forums, methods Rel
Foundations Fut
France J17
Fundamental education Wec
Further education Del
Gambia J104
Geography, teaching of Til
Germany, East J117
Germany, West J10
Ghana J102
Glossaries Bak
Graduates Wib
Gramophone recitals Kej
Great Britain J2
Greece and Islands J23
Greenland J8
Groups, organisation Re
Guidance, students Neg
Handbooks, adult education Dik
Handbooks, education Ded
Handicrafts, teaching of Tu
Health education Tup
Higher education Dek
History of adult education Dil
History of education De
History, teaching of Tel
Hobbies Tun
Hom economics Tuh
Hong Kong J79
Hospital patients Waf
Hospital patients, mental Wag
Housecraft, teaching of Tuh
Human relations Pam
Humanities, teaching of Ta
Hungary J119
Iceland J9
Illiterates Web
Immigrants Wed
Indexes Baf
India J88
Industrial workers Wik
Informational books Kib
Information services Kid
Intelligence, adult Pel
Intelligence, adult tests Pem
International aspects C
International organisations Ce
International relations, teaching of Tez
Italy J21
Japan J80
Jewish organisations Foh
Junior Community Colleges (USA) Fej
Kenya J108
Land-grant colleges Gol
Languages, teaching of Foreign Taq
Language, teaching of English Tam
Latin America J75
Laws of adult education Did
Laws of education Dad
Law, teaching of Tib
Leadership Qe
Leadership of discussions Sel
Leadership of groups Re
Leaders, training M
Learning situations Ra
Learning theories Pi
Leisure, theory Beb
Liberal arts, teaching of Ta
Liberal compared with technical and vocational education Wis
Libraries Kid
Library extension work Kit

Literacy Web
Literary societies Fin
Literature, teaching of Tar
Local education authorities Fih
Local studies, adult education Dip
Local studies, teaching of Tem
Long term residential colleges Fec
Luxembourg J16
Lyceums Fin
Malaya J86
Marking Sac
Mass illiteracy Wec
Mass media K
Mathematics, teaching of Teb
Mature students Nal
Maturity, psychology Pe
Mauritius J111
Mechanics' Institutes Fib
Mechanisation Goz
Mediterranean islands J22
Meetings, conduct of Rec
Mental ability of adults Pel
Mental hospital patients Wag
Mexico J75
Middle East J95
Ministry of Education Fa
Ministry of Education,
Circulars and Memoranda
on adult education Dif
.. on education Dag
Minorities Wed
Museums Kob
Music, teaching of Ton
National coordinating bodies Fab
National Adult School Union Fov
Netherlands J15
Newspapers Kob
New Zealand J40
Nigeria J106
Non-conformist organisations Fcf
Norway J5
Nyasaland J101
Offenders Wal
Older people Wu
Opera Tol
Organisation of education La
Organisations F
Overseas students Ro
Pacific Islands J85
Pakistan J90
Parents Wud
Parliamentary debates on
adult education Dic
.. education Dac
Periodicals Bac
Periodicals lists Bab
Personnel M
Philosophical societies Fin
Philosophy of education Be
Philosophy, teaching of Tav
Physical education Tur
Poland J122
Politics, teaching of Tep
Polytechnics, history Fig
Polytechnics, modern Wis
Portugal J20
Prisoners Wal
Prisoners of war Wed
Professional Associations Mib
Professional people Wic
Psychology, adult education Pib
adult maturity Pe
developmental Pa
educational Pi
teaching of Te
ublic expression Sel
Public schools (USA) Fil
Publicity Lac
Radio Kal
Reading speed Tap
Reading tastes Kic
Recreation, methods Tun
Recreation, theory Beb
Recruitment, personnel Mab
students N
Regional cooperation Lam
Religion, teaching of Taw
Religious ideals in education Bek
Religious organisations Fob
Residence, learning situation Ri
Residential colleges Feb
Research Bap
Retirement education Wu
Rhodesia J101
Role playing Si
Roman Catholic organisations Foc

Rumania J120
Rural adult education Gig
Rural areas, community development Gif
Salaries of personnel Meb
Sanitoria patients Waf
Sardinia J21
Scandinavia J3
Scholarships Na
Sciences, teaching of Teb
Seafarers Wot
Secondary education Dek
Selection of personnel Mab
Selection of students N
Self educational books Ko
Servicemen Wol
Servicemen-Ex Wor
Service conditions, personnel Meb
Seychelles J111
Short term colleges Fed
Sicily J21
Sierra Leone J105
Social sciences, teaching of Tav
Social services Gac
Social surveys Gab
Social surveys, teaching of Tem
Social work, administration Le
Sociology G
South Africa J113
South America J76
Spain J19
Sports, teaching of Tur
Staffing M
Standards Sak
State in adult education Fa
Statutes, adult education Did
Statutes, education Dad
Statutory rules and orders
  adult education Dif
  .. education Daf
Students, recruitment N
Student surveys N
Study Rob
Suburbs, community development Gid
Sudan J115
Summer schools, organisation Ril
Summer schools, description Feq
Surveys, social Gab
Surveys, students N
Surveys, teaching of students doing local Tem
Sweden J6
Switzerland J18
Tanganyika J109
Tasmania J39
Teachers' training M
Teaching methods Qa
Technical education Wit
Technical assistance in community development Goz
Techniques of teaching S
Television and radio Kam
Text-books Sab
Theatre Kec
Theatre, Amateur Tok
Theory of education Be
Trainees Wip
Training personnel Mab
Travel Ro
Trusts Fut
Tutorial classes Fak
Uganda J110
Ukrain J123
Unemployed Wig
UNESCO Ci
United Kingdom J2
Universities Faf
Urban areas, community development Geb
U.S.A. J60
U.S.S.R. J116
Village clubs Gik
Village colleges Gih
Visual aids Se
Visual arts, teaching of To
Vocational education Wit
Voluntary bodies Fac
West Indies J70
Women Wup
Workers Wik
Workers' Educational Association Fal
Workers, Young Wip
Working Men's Colleges Fic
Workshops, methods Ret
World Association for Adult Education Ceb
Written work, use Sag
Year books, adult education Dik
Year books, education Ded
Youth Wo
Yugoslavia J121
Zanzibar J111

MEMORANDUM: T-D-62 TO: Staff and Files FROM: Diana J. Ironside 9/28/65
(Internal Use)

SUBJECT ANALYSIS AND CLASSIFICATION SCHEME

This is going to be a simple-minded exposition on our present thinking about classification schemes for adult education in order to bring into focus some of our present ideas about this thorny subject. It will also, I hope, stimulate discussion to enable us to pursue a fruitful approach to the problem. This matter of a classification scheme seems to represent, for the adult educator in the field, a concrete anchor in the morass of "intellectual organization" in adult education. Perhaps that is why the LCE is asked continually how its "classification scheme" is progressing. For this reason alone, I think we need to tune in on some basic premises about the purposes and nature of a classification scheme.

I emphasize here that the major reason we have not produced a classification scheme already is not because we are not interested in it, but because we think such a scheme must arise out of the intellectual analysis of the discipline and not be imposed on it. As we all know, a number of different schemes have been devised for this field; in particular, the scheme for a working collection which Roger DeCrow organized at CSLEA, the faceted scheme Monica Greaves had developed for the National Institute of Adult Education (Great Britain) and the expansion of the UDC which I did for the Canadian Association of Adult Education. All of these schemes were relatively simple to compile, but all of them share the weakness of being organized "from the top down" and imposed on the field. They are organized primarily by sponsoring agency or kind of activity, rather than analysis of the content in the discipline.

PURPOSES OF A CLASSIFICATION SCHEME.

1. To shelve material in a Library: The most common use of a classification scheme in North America has been to arrange physically the materials in a library according to a classification order, so that a user may approach a subject area and find all the holdings of a library grouped together in an ordered arrangement on the shelf.

2. To organize bibliographies. A second purpose of a scheme is to organize references and bibliographies or abstract journals by the logical order of the scheme; that is, by subject and sub-categories of the subject. A classification scheme used in this way would organize such lists according to the inherent logic of the scheme and not randomly by the incidental, alphabetical arrangement of the subject headings, as is the case of Continuing Education Abstracts, #1.

3. Classified subject catalogue. A third use of a scheme, much more usual in Europe than in America, is to organize the Subject Catalogue in a library. The most difficult part of organizing information for biblio-

graphic references is the subject analysis which guides a reader to all the pertinent material in a particular subject area. Libraries on this continent use an alphabetical approach, which has the great advantage of phrasing the key to subjects in words that a user might use. It has the great disadvantage of scattering related material throughout the 26 letters of the alphabet. A classified subject catalogue gives a more rigorous, controlled approach to subject information because it displays the subjects of the library in the logical order of a classification scheme with the relationships between subjects displayed. We have not decided to use a classified subject catalogue, but I would be in favor of experimenting with it since vocabulary and concept definition is inevitably so volatile in our field and will continue to be so in the forseeable future. One way of exerting control on vocabulary is to organize the subject approach according to the inherent logic of a classification scheme.

4. Retrieval restraint. A classification number attached to a document could act as a very useful search restraint in the retrieval system to mitigate the lack of precise terminology and to increase relevance and reduce recall on a particular search. A classification number could also act as a generic restraint, allowing us to control search strategies at varying levels of generality.

KINDS OF CLASSIFICATION:

There are a number of reasons why existing classification schemes are not suitable for the field of adult education. First, most of them do not give adequate detail for specification of the highly complex subject in our field. Second, they do not cater for the special viewpoint of the adult education and of the LCE. Third, none of them sufficiently provide a flexible combination of terms which our subject matter demands. Fourth, even if one did devise a flexible instrument (as with the expanded UDC), this flexibility is achieved only by very lengthy and complicated notational devices.

Hierarchical classification VS Faceted classification.

Most general classification schemes, such as Dewey, UDC, Library of Congress, Bliss, Colon, etc., are based on the enumerative tree-of-knowledge classification principle. This means that the schedules display the genus-species relationship in a hierarchical fashion, from the general to the particular, in the traditional disciplines. A glance at the 9 major divisions of Dewey and the UDC illustrate this:

0 Generalities

1 Philosophy, Psychology

2 Religion, Theology

3 Social Sciences, Law, Education

4 Philology, Linguistics, Languages

5 Mathematics and Natural Sciences

6 Applied Sciences, Medicine, Technology

7 Arts, Entertainment, Sports

8 Literature

9 Geography, Biography, History

Because of the restrictions in applying the traditional hierarchical schemes to the complex subjects of today, the faceted principle of classification has been developed and has proved very successful with special collections. The basis for such a classification is highly specific subject matter which is compound and can only be accurately designated by subject headings combining two or more concepts.

The process of facet analysis is the process of grouping concepts in a given field of knowledge into homogeneous, mutually exclusive facets, each derived from its parent universe by a single characteristic of division. Facet analysis is analogous to hierarchical classification in that it is based on the rules of logical division. Every distinctive logical category should be isolated and every new characteristic of division and every new relationship is recognized. These facets are not locked into rigid enumerative schedules, as in the hierarchical classifications, but are left to combine with each other in the fullest freedom so that every type of relation between concepts and between subjects may be expressed. It is also free from the genus-species relation, in that concepts in compound subjects may be combined to designate new logical relations between them and thus better reflect the complexity of the concepts in adult education.

I give an outline below of the faceted classification scheme developed for and used by the National Institute of Adult Education, Great Britain.

B reference works, theory

C International aspects

D,F,G, Comparative studies

J Description of work in various countries

K Mass media

L Administration

M	Personnel
N	Students
P	Psychology
Q	Teaching methods
R	Learning situation
S	Teaching aids
T	Teaching of particular subjects
W	Special classes of people

This scheme has a number of weaknesses in my view and these weaknesses are possibly inevitable. It seems to me this scheme reflects the development of adult education in Great Britain and has not been sufficiently analyzed to display particular major facets or components of the discipline. It may be that adult education is such a cultural phenomena arising out of the particular culture and times, that commonality in its practice throughout the world cannot be shown usefully in the organization of its literature. This point remains to be proved.

CLASSIFICATION SCHEME AND THESAURUS

The Thesaurus of educational terminology that the Western Reserve Group has been working on is of great interest to us at the moment as it is being displayed in a faceted arrangement. This means that the terms that Western Reserve has collected have been sorted experimentally into four major facets: People, Things, Characteristics and Activities. They felt, and so did we, that this would give us a logical approach to the deep indexing of documents and would illustrate clearly the relationship between indexing terms. It would display both generic-specific relationships and other relationships between concepts. While it is not clear at the moment if this very broad group of facets can aid us in developing a classification scheme, it is interesting to speculate about a similar logic giving rise to a classification scheme and to a thesaurus.

AN EXPERIMENTAL APPROACH

When we began discussing this faceted approach to a thesaurus with Western Reserve, we tried to apply the process of facet analysis to adult education to see what we could come up with. The attached outline illustrates my thinking up to this point.

(In this memo, I've drawn freely from the work of the British Classification Research Group).

APPENDIX 16

SUGGESTED OUTLINE FOR A CLASSIFICATION SCHEME

A. OUTLINE OF CATEGORIES

1. ADULT EDUCATION IN GENERAL - the field
2. THE ADULT PARTICIPANT
3. INSTRUCTIONAL SITUATIONS
4. METHODS
5. TECHNIQUES
6. DEVICES
7. PROGRAMS
8. SPONSORING AGENCIES
9. ADMINISTRATION
10. PROGRAM PLANNING
11. AGENTS - instructional, administrative, etc..
12. EVALUATION
13. RESEARCH METHODS

B. OUTLINE OF SUB-CATEGORIES

2. THE ADULT PARTICIPANT

    Physiological characteristics
    Psychological characteristics
        intelligence
        learning ability
        needs
        interests
    Socio-economic characteristics
        occupation
        age
        sex
        marital status
    Educational level

3. INSTRUCTIONAL SITUATION

    Learning Theories
    Teaching Process
    Physical factors affecting learning

4. METHODS

Individual methods

- correspondence study
- apprenticeship
- internship
- tutorial - directed individual study

Group methods

- meeting
- class
- clinic
- laboratories
- residential adult education
- conferences
- workshops & institutes
- seminar
- study group
- discussion group
- short course
- trips, tours, & travel

Community development

5. TECHNIQUES

- Brainstorming
- Buzz groups
- Colloquy
- Debate
- Forum
- Group discussion
- Interview
- Lecture
- Panel
- Role playing
- Symposium
- Demonstration - process

6. DEVICES

- Films
- Radio
- Television
- Film strips
- Slides
- Recordings
- Tapes
- Teaching machines
- Result - demonstration (illustrative device)

7. PROGRAMS

- Descriptive - about programs by program area
- Content materials

8. SPONSORING AGENCIES

- Universities, colleges
- Community, junior colleges
- Public schools
- Libraries
- Voluntary agencies
- Armed forces
- Industry
- Federal and State government agencies
- Churches
- Professional associations
- Labor unions
- ETC.

9. ADMINISTRATION

- Finance
- Publicity
- Physical facilities
- Enrollment procedures
- Tuition and fees
- Counseling and guidance services

10. PROGRAM PLANNING

11. AGENT

- Characteristics
- Selection
- Training
- Salaries
- Professional associations

12. EVALUATION

- Techniques
- Measurement

SUBJECT HEADINGS FOR ADULT EDUCATION

APPENDIX 17

THE FOLLOWING SUBDIVISIONS MAY BE USED WITH SUBJECTS AS REQUIRED

NAMES OF COUNTRIES, STATES, PROVINCES, CITIES (Use GREAT BRITAIN rather than England)

ACCELERATION

ADMINISTRATION

AIMS

ANNUALS

BIBLIOGRAPHY

BIOGRAPHY

COMPARATIVE STUDIES

CONFERENCES

CONSTITUTIONS, BY-LAWS

COURSES, PROGRAMS

DICTIONARIES

DIRECTORIES

EVALUATION

EXPERIMENTAL PROGRAMS

FEDERAL SUPPORT

FINANCE

HISTORY

INSERVICE TRAINING

INSTRUCTIONAL MATERIALS

JOURNALS

LAWS, LEGISLATION

METHODS, TECHNIQUES

ORGANIZATIONS

PARTICIPANT DATA

PARTICIPANT SURVEYS

PERSONNEL DATA

PHYSICAL FACILITIES

PROGRAM PLANNING

PSYCHOLOGICAL BACKGROUND

RESEARCH

SOCIOLOGICAL BACKGROUND

STATISTICS

STUDENT SERVICES

STUDY, TEACHING

SURVEYS

TESTS, TESTING

THEORIES

EDUCATIONAL NEEDS

EDUCATIONAL PLANNING

EDUCATIONAL PSYCHOLOGY

x Psychology, Educational;

EDUCATIONAL RADIO

x Radio, Educational;

xx EDUCATIONAL MEDIA

EDUCATIONAL RESEARCH

x Research

EDUCATIONAL SOCIOLOGY

x Sociology, Educational

EDUCATIONAL TV

x TV, Educational

xx EDUCATIONAL MEDIA;

Elementary education

see ADULT BASIC EDUCATION; LITERACY EDUCATION;

EMPLOYMENT

see also UNEMPLOYMENT;

xx UNEMPLOYMENT;

EMPLOYMENT AND EDUCATION

ENGINEERING CONTINUING EDUCATION

MEMORANDUM: L-D-14 TO: Pat FROM: Diana Ironside August 20, 1965
Staff & Files

SCOPE NOTES ON SUBJECT SUBDIVISIONS

Administration --
Use for material on the organization and/or administration of a particular subject area, including agencies operating programs.

Aims and objectives --
Use for literature pertaining to the broad objectives of a field, particular subject area of a field, or of agencies.

Bibliography --
Use for significant bibliographic works.

Biography --
Use for collections of biographical studies in a particular subject. May be used also with a particular subject if a biography of a person contributes significant information about that subject, and if a more informative subdivision (such as history) is not relevant.

Conferences --
Use when the subdivision will group important conferences together or when the fact of a conference is significant in a particular case. Often this subdivision will add nothing to the user's understanding of a subject.

Constitutions and By-laws --
Use for actual text of constitutions or by-laws of a particular institution or agency. Do not use with a general subject.

Courses and programs --
Use for texts and discussions of particular or specific courses or programs in a subject or offered by a particular institution.

Directories --
Use for significant directories in a particular subject.

Evaluation --
Use for literature that assesses the usefulness of specific programs or techniques. Do not use for general discussion of evaluation techniques.

Federal support --
Use for specific discussion of federal aid and support of various kinds in a particular subject area. For literature on a broader subject, use "finance".

SCOPE NOTES ON ADDITIONAL SUBJECT SUBDIVISIONS AND ON SUBJECT HEADINGS

Memorandum: L-D-19 TO: Staff & Files FROM: Diana September 27, 1965
(internal)

Section A: Subject Subdivisions

Annuals - Use for yearbooks, annual reports, etc., of particular institutions or agencies. May also be used with a general subject heading for non-US materials to provide an additional aid to the user. The heading CORRESPONDENCE EDUCATION-AUSTRALIA-ANNUALS, for example, would allow the annual reports of correspondence study branches of government departments in Australia to be accessible under a generic subject heading.

Journals- Use with a general subject heading for open entries of journals and periodicals that are catalogued.

Subdivisions for discussion

Organizations and agencies
Societies, etc.
Personnel Practices
Personnel Training
Training

Section B: Subject Headings

NB. Following are some scope notes for those subject headings which may give us difficulty. These are for discussion only and are subject to change.

ADULT BASIC EDUCATION - Use for discussions of elementary education for adults. This covers wider range of subject matter than literacy education and a narrower range of subjects than fundamental education. See Scope Notes #14 under these headings.

ADULT CHARACTERISTICS - Use for general studies or discussion of the nature of adulthood, maturity, the life cycle, psychological characteristics of adult. This is a more generic heading than adult learning or adult interests.

ADULT EDUCATION - This heading should not be used without form or geographic subdivisions. It may be used for general discussions of the whole field of adult education. It may be used also in particular instances to allow for generic searching, by grouping, for example, annual reports of institutions in foreign countries under a general heading.

Memorandum: L-D-19

ADULTS INTERESTS	A specific heading to be used for studies of what adults are interested in learning and for interest inventories and other discussions of adult interests that are used in counseling and guidance.
ADULT LEARNING	Use for discussions of the ability of adults to learn, their speed and retention of learning and discussions of those things that can be learned best at various ages.
AGRICULTURAL EDUCATION	Use for discussions of young people or the rural population in farming subjects.
AGRICULTURAL EXTENSION	Use at the moment for all studies of cooperative extension programs sponsored by the USDA, State Dept., land grant universities, experimental stations and local counties and for youth work, home demonstrations, 4-H clubs, etc. More specific than rural adult education.
ALUMNI EDUCATION	This heading is a good example of the scattering weakness of alphabetical subject headings. The heading is used for special education programs for college and university alumni arranged by the institution.
ARMED FORCES EDUCATION	Use for literature pertaining to educational programs sponsored by the armed forces or the Department of Defense and available to members of the services. Do not use for educational experiences of veterans.
AUDIO-VISUAL EDUCATION	This heading is more generic than PROGRAMMED LEARNING, EDUCATIONAL TV, EDUCATIONAL RADIO, AND FILM IN EDUCATION. Use for literature dealing with the spectrum of audio-visual education.
AUTOMATION AND EDUCATION	Use for literature concerned with the implications of increasing automation for education both in instructional materials and in automation of education systems, financial and administrative.
BUSINESS AND INDUSTRY EDUCATION	Use for literature on education programs available to employees in business and industry sponsored by the corporation. Do not use for discussions of programs in schools of business administration.
CHURCH ADULT EDUCATION	Use for discussion of non-religious adult education sponsored by churches. For adult education in religion, use religious adult education.
Under discussion:	Civil Defense; Communication - Philosophy and theory; Community action

APPENDIX 18

SUBJECT HEADINGS AND INDEX TERMS

Memorandum: T-D-63 TO: Staff and Files FROM: Diana J. Ironside Sept. 28, 1
(Internal Use)

1. Introduction

Since we have now spent considerable time analyzing subjects via subject headings and indexing terms, I think we are ready to clarify certain operational confusions inherent in these two instruments of subject analysis and that are now of considerable trouble to me.

To recap our thinking, I would like to recall that our first experience in indexing in depth was based on isolating words in the document and using these as possible indexing terms. Then increasingly we felt that such a practice was not discriminating sufficiently between various concepts that the terms were intended to connote, and we began to restrict indexing to more discriminating words and to bound terms. Our last efforts in controlling index terms found us using an increasing number of bound terms, and in fact being unable to clearly distinguish between what should be a subjec heading and what should be an index term. This seems to me to be a fair description o our progress to date.

In order to help clarify our thinking, I am going to propose some definitions for "subject headings" and "index terms" and propose uses for these two methods of subject analysis. To prevent unnecessary misconceptions, I list below the definitions as I see them, so that you will know as clearly as possible what I mean.

CONCEPT - an assumption or basic premise, explicit or implicit, that underlies the activity of adult education. It may be a simple assumption, such as "adult", or a complex assumption, such as subsumed by the word "administration" or a cluster of assumptions, as subsumed by the phrase "agricultural extension."

SUBJECT HEADING - a word or a pre-coordinated phrase, used to represent the subject of a unit of information, which may consist of one or more concepts, either simple or complex.

INDEX TERM - a word or tag used to connote a simple concept or each discrete element of a complex concept. The tag used represents the concept but is not itself a concept.

2. SUBJECT HEADINGS

The above definitions, whether valid or not, do allow us to look at some of the purposes of subject headings as used in library catalogs and bibliographies. Traditionally speaking, a subject heading should represent the specific subject or subject in a document, and do so at that level of generality with which the author is concerned. This means that a document on the New York State Extension Service should be represented by the subject "New York State Extension Service" and not by a more generic heading such as "Agriculture Extension-New York." We have had trouble with this restriction, which I think is inevitable with an alphabetic subject catalog and we may find ourselves moving toward an alphabetic-classed catalog which may be an unsatisfactory compromise between an alphabetical and a classified catalog.

Be that as it may, everytime we apply the principle of specific entry to a unit of information, we realize that from a particular user's point of view, we are only displaying one or possibly two levels of generality and also are displaying our own precoordination of the concepts contained in that document in a manner that makes sense to us. While it is inconceivable to represent the many concepts in a unit of information in a manual catalogue by any other means than precoordinated headings, I think we need to analyze the method and elements of coordination much more carefully than we have done. This leads us, of course, to the second kind of subject analysis: indexing.

3. INDEX TERMS

The real freedom that indexing in depth gives us, assuming a mechanized means of coordination and retrieval, is that discrete elements in concepts, in discussions of ideas and in documents, can be represented by non-coordinated tags allowing them to combine freely with each other as writers or researchers chose to do so. This means that we must be clear about the terminology or tags with which we represent such discrete elements in concepts and in documents.

We began binding many index terms to form what are in reality, subject headings, because of the lack of retrieval power of certain words used unrelated to other words. I can illustrate this best by using a specific example. The phrase "Agricultural Extension" has been used as a subject heading and as an index term. Basically, I think "Agricultural Extension" is a cluster of assumptions that now has a status of a concept in the field. It is composed of a number of elements: (1) the element of educand or recipient(that is an adult rural population); (2) the element of teacher or agent (that is a federal or state government agency or an associated land-grant college) (3) and an element or activity or subject taught (that is, subjects to enable the rural population to be more effective workers and citizens in their particular environment, not including vocational education in farming subjects). I don't know how accurate this description of the elements that are concerned, but it is my understanding of what is subsumed by the phrase "Agriculture Extension".

It is also true that these elements are not fixed but variable; for example, the assumption about the character of the agent in the United States and in Canada. This phrase "agricultural extension" is full of traps for the unwary and does not in my view provide enough stability to use as an index term in itself. The same thing is painfully true of the phrase "continuing education" used by Cy Houle in an extremely restricted sense and by me in a very broad sense. This highlights the difficulties in classifying the discipline, as Coolie Verner has pointed. It makes our job of classification building a very complex problem.

SOME INFORMATION SYSTEMS AND INSTALLATIONS VISITED OR STUDIED

IBM Technical Information Retrieval Center, Yorktown Heights, N.Y.

Western Reserve University, Center for Documentation and Communication Research, Cleveland, Ohio.

National Referral Center, Library of Congress, Washington, D.C.

National Association of Social Workers, (abstract journal project for N.I.M.H.), New York, N.Y.

Defense Documentation Center, Department of Defense, Washington,DD.C.

Engineers Joint Council Information System, New York, N.Y.

Systems Development Corporation, Santa Monica, Calif.

Rome Air Development Center (COLEX On Line Interactive Retrieval Experiment), Griffiss Air Force Base, N.Y.

Documentation Incorporated, Washington, D.C.

Scientific Information Exchange, Washington, D.C.

American Institute of Physics, New York, N.Y.

American Petroleum Institute, New York, N.Y.

Center for Application of Science and Technology, (CAST), Wayne State University, Detroit, Mich.

University of Toronto, Ontario New Universities Library Project (ONULP), Toronto, Canada.

Basic Indexing and Retrieval System (BIRS), Learning Systems Institute, Michigan State University, East Lansing, Michigan.

Urbandoc, American Institute of Planners, New York, N.Y.

Project Lex, Office of Naval Research, Department of Defense, Washington, D.C.

Health Law Center, University of Pittsburgh, Pittsburgh, Penn.

National Library of Medicine, MEDLARS Project, Washington, D.C.

General Electric Technical Information Exchange, Schenectady, N.Y.

THE LIBRARY OF CONTINUING EDUCATION at SYRACUSE UNIVERSITY

A COLLECTION OF STUDIES OF ADULT LEARNING FOR EXPERIMENTATION WITH DOCUMENT RETRIEVAL TECHNIQUES

February 9, 1966

The Library of Continuing Education at Syracuse University is engaged in a three-year planning project to dosign improved information services in the field of adult education. This work is supported, in part, by a contract with the Cooperative Research Program of the U. S. Office of Education, and is intended to make the extensive collections of adult education literature being maintained by LCE useful to a wide range of adult educators throughout the country.

A computer-aided information retrieval system is one of the possible services we are exploring. Since such systems are based on thorough and consistent indexing of documents or their abstracts, we have developed standardized forms of bibliographic citation, abstracting, classifying and indexing. We hope these will enable us to retrieve documents quickly and precisely by searching on the terms designated in an experimental thesaurus of adult education concepts.

TEST COLLECTION

We intend now to test and refine these analytical tools using a collection of document related to studies of adult learning. We feel that a test collection on this subject can be developed for experimental purposes which will fulfill the following criteria:

1. It should contain a core of fundamental literature, basic to the emerging discipline of adult education, underlining practice in all parts of the field.
2. It should be broad enough to contain information relevant to actual problems of the researchers, scholars, students and practicing adult educators who are committed to advancing the core of tested knowledge supporting adult education.
3. It must, however, be manageable in terms of the time and staff available to LCE. It should be a core which can be expanded or contracted as resources become available.

4. It should bring together unpublished, out-of-print, scattered, or otherwise inaccessible research and research-related documents.

5. It must facilitate interaction with an identifiable and significant group of potential users to whom its content and scope can be clearly explained.

Since we need advice and guidance from our colleagues in the adult education field in developing and analyzing this test collection, let me now describe exactly how we are going about this work.

We judge adult learning to be the central, basic concern of the adult educator. Increased understanding of the conditions and methods for effective adult learning seems to us the long-range key to improving practice in the field. Research in this basic area has increased in recent years and we anticipate an acceleration of this trend. Therefore, we are taking up the literature directly related to adult learning in particular learning situations as the first priority area in developing an information retrieval system.

We have in mind a very specific group of potential users: researchers; the professors who are guiding research; students; staff members of national and state organizations and other policy makers who guide research efforts; reviewers and others who interpret research findings to a wider audience; scholars and researchers in related disciplines.

Since we can only estimate the amount of useful material already in existence and relevant to the subject, we are seeking out and working on the following types of materials in the following order.

1. Controlled, experimental research and systematic investigations.

2. Thoughtful, serious efforts to evaluate or assess the effectiveness of learning on the basis of personal experience and observation.

3. Theoretical formulations; reviews or discussions intended to examine the problems of learning evaluation, to suggest new lines of research, etc.

4. Bibliographies; research reviews; interpretations of related research for the use of adult educators.

5. Research methods in evaluation of adult learning.

We will not at this time attempt to cover much of the following types of literature: descriptions of practice, participation studies, elementary reviews and digests intended for the classroom teacher or group leaders, etc. When we have perfected our techniques by handling the basic Test Collection, we shall certainly want to extend the collection to include a wide range of these materials. In addition, we are planning other services to facilitate access to these types of materials which are directly useful to teachers, administrators and policy makers, but less vital to researchers.

SCOPE OF TEST COLLECTION

We are collecting and analyzing documents for the Test Collection on the following subject aspects of adult learning:

1. Capacity of adults to learn: intelligence, speed, retention, types of material most easily learned; physiological, psychological, sociological influences on learning in particular situations.

2. Conditions of adult learning: physical, emotional elements in the learning environment; instructor behavior; leadership styles, etc.

3. Effectiveness of various methods.

    a. correspondence study
    b. programmed learning
    c. sensitivity training
    d. simulation techniques
    e. residential adult education
    f. etc.

4. Assessment of educational needs and specification of learning objectives in terms which relate to the development of specific learning experiences and evaluation of their effectiveness.

5. Methods of learning evaluation as exemplified in studies dealing with adult populations; tests and measurements developed especially for adults.

We follow the definition of adult education suggested by Jack London and Robert Winker An adult is one, regardless of chronological age, who by choice or necessity has assumed mature responsibilities through marriage, termination of full-time schooling, taking employment, etc. Education is an organized, extended and systematic effort, usually with the help of a teacher, leader, or other learning agent, in which the intent of the student or participant is to acquire a body of knowledge, skill, or attitudes.

The Test Collection will include at this time only those studies which deal directly and explicitly with adult learning. We cannot collect, analyze and index the general literature of learning theory and methods, most of which derives from experiments with school children. The ultimate solution to this problem of coverage of other parts of education and related disciplines, especially in the social sciences, is, we feel, the development of an integrated network of information centers, which will make this access to wider knowledge practical. We are actively cooperating with the Educational Research Information Center of U.S.O.E. to help create such a network and we are in contact with information centers in vocational education, educational media and other areas from which useful materials will emerge. Meanwhile, we must restrict our collection to studies dealing with adult learning or with summaries, reviews and other interpretations explicitly intended for the adult educator.

It must be equally clear that we do intend to cover and we will ferret out at any cost all studies of adult learning regardless of method, sponsoring agency, or academic affiliation of the researcher, or form or place of publication.

We deplore the prevalent isolation of adult "education" and "training". We are collecting and analyzing studies from industrial and military training.

USER PARTICIPATION

We require several types of help from our colleagues in the field.

Acquisition. Despite the huge collections of the LCE, we discover that when we assemble lists of studies from bibliographies and other sources, we do not in fact have all the documents. In due course, lists of items we want and cannot get will be circulated. We hope you will donate your copies or allow us to photocopy them.

Abstracting. We have a staff of full-time professional abstractors, now well trained. Nonetheless, abstracting is laborious and time consuming. If some of you with particular interest and competence in certain aspects of learning studies, evaluation, particular methods, etc. would volunteer to do some abstracting, we would be most grateful. Particularly helpful would be volunteers who can handle extremely technical statistical studies. All abstracting must be done precisely according to the methods we have laid out. However, we have a guide on how to do this and forms to use.

Evaluation of studies. We will screen and select documents for inclusion. We will, however, want to call on some of you to review our judgments in some areas.

Analysis. We are at work on classification schemes and controlled indexing vocabularie Here lies no doubt the point at which researchers and others interested in adult learning can be most helpful.

We want to find ways in which interested users may collaborate in devising the subject analytical tools we will use. In general, it seems best to work on these problems to the best of our ability, then to submit our classification schemes, word lists and other materials for your advice and revision.

Experimental Users. At a certain stage, we will need actual questions put to the Test Collection for experimental purposes.

MAP OF ADULT LEARNING TEST COLLECTION

TO: Staff FROM: Roger 2 June 1966

I am plunging in to make some kind of sketchy outline of the areas we are covering in TC primarily as a way of specifying in more detail what it covers and as a selection guide. I do not for one moment think this an adequate outline, but it is something to work with. Let us ask of each document where it would fit or what categories would be needed to contain it.

TC has focussed on three areas: 1. adult learning studies -- ability to learn, influence of age, etc., typical levels of ability or of acquired learning skills, etc.; 2. research studies evaluating the effectiveness of various adult education teaching methods; 3. evaluation theory, techniques, problems, i.e., how to evaluate learning and the instruments available for that purpose.

LEARNING RELATED CHARACTERISTICS OF THE MATURE ADULT

A. Motivation.
We are not handling these studies at this time, but collecting references against the future.

B. Interests.
Deferred.

C. Mental ability
Here we are collecting heavily with special emphasis on abilities related to learning of meaningful verbal material.

1. Intelligence, learning ability.
   Thorough collections.
2. Concept learning -thorough
3. Comprehension-thorough
4. Reasoning -thorough
5. Retention-thorough
6. Speed--thorough
7. Creativity--collect only those studies which are explicitly related to learning by educational methods

D. Physical capacities
In this area we collect only studies which explicitly relate any of these factors to learning. And research reviews or other documents which summarize and interpret in a way useful to educators.

1. Hearing

2. Vision

3. General health and physical developemnt

4. Motor skills, dexterity

5. Physical handicaps--there are now 10 centers in all aspects of physical and psychological disabilities and an ERIC clearinghouse funded by USOE. No material of any kind on these subjects is to be acquired or handled by LCE.

E. Psychological, personality characteristics.
Studies collected only when they relate these variables explicitly to learning.

F. Social role correlates of learning
Studies of social-economic status, social class, occupation, life cycle phases, religion, etc., when these variables are related to learning.

EVALUATION OF THE EFFECTIVENESS OF METHODS AND TECHNIQUES FOR THE EDUCATION AND TRAINING OF ADULTS

A. Teaching styles
We have found a few studies dealing in evaluative spirit with the general, overall style of teacher behavios or emotional climate of adult learning situations. Chief example is the Solomon research relating observed behaviors to achievement.

B. Individual oriented

1. Independent study

2. Tutoring

3. Programmed instruction

4. Correspondence study

5. Visits (farm, home, etc.)

6. Consultation

7. Job related training
(in-service, apprenticeship,internship,field work, etc)

C. Group oriented

1. Class

2. Short course

3. Discussion
group-discussion, brainstorming, buzz groups,etc.)

4. Lecture
including sermon, telelecture,lecture-demonstration,etc.)

5. Residential

6. Conference

7. Meeting

8. Clinic

9. Institute

10. Forum

11. Panel

12. Symposium

13. Workshop

14. Demonstration
    (home demonstration/method,result demonstration)

15. Debate

16. Laboratory training

17. Simulation
    (games, self-confrontation)

18. Field trips

19. Travel study

D. Community oriented

1. Community developemtn/organization/action
   (We are sampling this field in cautious manner because of difficulty of deciding whether we should confine our interest to those studies where some educational method per se can~~n~~ be isolated.)

2. National development
   Community, national, agricultural, economic development in foreign countries deferred.

E. Mass contact

1. Radio

2. Educational, instructional television

3. Bulletins, extension circulars, etc.

F. Diffusion of innovation
   Sample these studies and seek out those which relate adoption specifically to educational programs.

THEORY, METHODS, TECHNIQUES OF EVALUATING ADULT LEARNING

A. Theory

B. Data gathering techniques
Interview, questionnaire, diary, content analysis, etc.)

C. Research design
Pre-post test/sample surveys/ etc.

D. Evaluation techniques
Exams and grading, attitude scales, self-evaluation, customer satisfaction, adoption, performance evaluation, observer ratings, etc.

E. Evaluation devices, tests
We collect material on the technical problems of evaluation, the construction and validation of tests, etc. when directly related to adult education. We collect copies of intelligence tests and other instruments ~~in~~ especially useful in evaluation of adult learning and abilities.

THE LIBRARY OF CONTINUING EDUCATION at SYRACUSE UNIVERSITY

April 18, 1966

FIRST MAJOR PURPOSE - A LIBRARY OF ORGANIZED DOCUMENTS

Before attempting to re-organize a collection of materials in LCE, we set out certain criteria for systematic document organization. These are:

1. Principles of organization should be flexible enough to serve the functions of both a national library and an information clearinghouse.
2. As far as feasible, nationally accepted standards of bibliographic description should be followed.
3. The system should be adaptable to both traditional methods of document access, such as hard copies of documents, and card catalogues, and to documents in microform and bibliographic records in machine-readable form.

So we have devised rules for bibliographic description of documents and designed a cataloguing worksheet to capture all such information in 27 separate fields. The rules, used together with ALA and LC rules, control choice and form of entry of each unit of information. They also control punctuation, spacing, and other details that need to be specified for a system that may be based on computers. In addition to 27 fields for each unit of bibliographic data, we assign 2 fields for index terms, and one field for abstract.

A worksheet is filled in for each document or part of a document that is analyzed as a unit. Four literature analysts are responsible for all cataloguing and for the depth analysis of indexing and abstracting, of which I will speak in more detail later. Once a worksheet is completed and edited, it is passed to our flexowriter operator who keys in the data onto punch paper tape. This master data tape, containing information in all 30 fields, is the source record from which all output is produced.

The first output generated is catalogue card sets for each document. Control program are used on the flexowriter to direct the reading of the data tape to produce the usual catalogue cards: main entry, subject and added entries, and shelf list. Continuous card stock is used and all data, including headings on added entries, are typed entirely automatically by the flexowriter.

The process of classification and assigning of subject headings are aspects of subject analysis of which I'll speak in a moment.

SYSTEMATIC DOCUMENT LISTING

The second major objective is to provide systematic listing of new and significant publications for the use of the adult educator. There is no regular listing at present in the field nor is there a review or abstract journal. The provision of a variety of current awareness services to keep the field informed of literature of relevance to their work, is an important function of an information center. We are experimenting, therefore, with two types of such services.

The first is an experimental abstract journal. In addition to catalogue cards, we are at present using our source data tape to provide the information for Continuing Education Abstracts. The second issue, just published, contains 63 bibliographic citations and abstracts arranged under 8 broad subject categories. 100 adult educators have been invited to participate as user/analysts to help us to evaluate systematically the usefulness to them of the abstracts, the quality of the analysis, and the relevance of the specific documents to their interests.

We are also producing a biweekly list of recent acquisitions to LCE. This is a quick and dirty listing of publications in random order, providing fast access to new literature for our users.

INFORMATION RETRIEVAL TECHNIQUES

Our third purpose is to design and test techniques of retrieval of the information or subject content of documents in an effective and efficient manner. We believe that the matching of relevant literature to a user's questions is related directly to the depth of analysis of the subject matter of the document. In other words, we must increase the number and quality of access points the user has to the literature so that all pertinent data can be fully utilized by him. This poses one of the fundamental intellectual problems facing us. We are developing and testing a number of analytical tools for subject analysis, with rules or guidelines for their use. I would like to discuss some of these briefly.

Before I do so, let me say a word about two pre-conditions, which were set up to aid us in our experimental development of these tools. We decided to establish a controlled collection of documents in a specified subject area, to be indexed and abstracted, on which subject retrieval and other tests could be performed. This Test Collection has been established in a fundamental area to the literature, basic to the emerging discipline of adult education, adult learning. We are putting into this collection, all these materials in our library, and that we can ferret out fro other sources, that meet our criteria. These are: controlled research, systematic investigations, theoretical formulations, bibliographies, and research reviews.

The second pre-condition is a close, two-way contact with a group of users who will work with us in the design, testing, and evaluation of our analytical tools and ou

This user/analyst group is also a bridge to all other adult educators, whose needs and use of the literature we are investigating as part of a background study of the field of adult education.

The aspects of subject analysis with which we have been concerned are:

1. Abstracts
2. Classification Scheme
3. Subject headings
4. Index terms

I will touch only lightly on the first three areas. Although these tools have many possible uses, we view them primarily as methods of identifying topics of interest in documents and displaying their relationships among the topics of subjects.

We are writing informative abstracts of every document in the test collection. These precises of up to approximately 300 words, give the important information in the document. The reader of the abstract journal, or the user requesting a search, can determine from the abstract the purposes, methods, major findings and important variables of research studies, and the significant content of other kinds of document We hope to use these abstracts experimentally as the data base on which to perform natural text searches.

The two primary purposes of a classification, either hierarchical or faceted, are: organizing the arrangement of documents on shelves or references to them in bibliographies, by the order of subjects in the scheme; and organizing the access points to the subjects within documents, through classified subject catalogues or through mechanized or automated indexes. Since no existing classification scheme is suitable for a special library in adult education, we are now attempting to defin the major facets of importance in our literature as we analyze documents.

Subject headings for an alphabetical subject catalogue, which we still have in traditional form on cards, represent the overall topic or topics of a document at the specific level of that document. Since such headings, generally pre-coordinated, are applied to the overall subject of a document, and not to the many concepts within it, they display subjects at a relatively high level of generality. There is no list of subject headings that covers adult education adequately and we have drawn up our own list, keenly aware, of course, of the inherent disadvantages of alphabetic subject headings.

The real disadvantages of traditional subject headings seem to be two-fold: they are pre-coordinated in a manner that attempts to predict a user's questions in advance; and applied as they are to topics of documents, they do not reveal information or data within the document. This has led us to explore the greater potential of indexing in depth, using terms that denote the important ideas within any particular document.

Subject headings are pre-coordinated index terms, in a sense. When terms are not coordinated as they are assigned, they must be coordinated at the time of search. This post coordination of terms is the distinctive feature of coordinate indexing systems, which allows the searcher greater flexibility and depth in scanning the store of literature.

INDEXING

Our experience in indexing has led us to see three levels at which information in a document can be indexed. Subject headings index literature at an overall topic, or high level of generality. Conversely, isolating the actual information-carrying or key words the author uses, and specifying these as indexing terms, is indexing at a detailed or very specific level of generality.

Neither of these approaches seemed appropriate to the evolving and changing terminology of our literature. Subject headings could not give us the depth of analysis we need to appropriately identify literature of use to researchers. Terms from documents reflected the volabile, imprecise and rapidly changing concepts and language in our field, and so gave us no control over related concepts.

We decided then to index at a level mid-way between subject headings and terms from documents - that is, at the level of the important concepts or groups of data in a particular unit of information. This concept level of indexing enabled us to select terms with high discriminatory power for indexing purposes and to specify the varied relationships among concepts and terms. Using this approach, we could isolate significant concepts, and attach terms to these concepts that exactly denoted them. Such indexing does not predict questions of users, but gives a telegraphic picture of the content of the document.

In indexing a document, we ask ourselves the questions "Who, What, Where, Why, When" in order to identify indexable concepts. We look for significant variables, factors about the adult participant, the teacher, the educational methods used, the subjects of study, the sponsoring agency, and so forth.

Terms were derived simply by indexing some 400 documents in a very free fashion, using terms in documents and also by imposing other terms that usefully connoted important ideas. We then took this word-list, and culled through it carefully, defining the meanings of terms, controlling synonyms, and setting up small hierarchies of broader and narrower relationships among terms.

This exercise has given us the beginnings of a thesaurus, which is simply a structured body of terms with their various relationships clearly specified. A thesaurus in a sense combines the alphabetic relative index with the relational and hierarchic aspects of a classification scheme. Like classifications, a thesaurus is a logical tool to enable us to index a body of documents thoroughly and consistently.

Most of the thesauri developed in this country to date, such as by the Engineers Joint Council, ASTIA, now Defense Documentation Center, and American Petroleum Institute, are alphabetically arranging lists of terms, with broader, narrower and other relationships among terms stated. These thesauri are like subject headings lists to use, but are like classification schemes in that logical and hierarchic relationships between concepts are clearly specified.

There is some interest now in a faceted array of terms, which clumps groups of terms under classes, as a classification scheme does. Western Reserve University is arranging an experimental thesaurus of educational terms in such a classified arrangement.

We are developing our thesaurus and our classification scheme hand-in-hand because both are closely linked processes of classification, and must be intimately related as they grow out of the analysis of the literature.

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APPENDIX 23

THE LIBRARY OF CONTINUING EDUCATION at SYRACUSE UNIVERSITY

SUBJECT ANALYSIS

PURPOSE OF LITERATURE ORGANIZATION

1. To allow us to test matching of users' needs to the literature of the discipline - by retrieval of documents pertinent to specific questions or interest profiles from users.

2. To allow us to test particular services based on the organization of the concepts in documents - such as an abstract journal (Continuing Education Abstracts) and periodic bibliographies.

ANALYSIS PHASE

1. In order to organize the literature, we are establishing a Test Collection of Documents. This collection will contain as much of the literature as we can obtain pertaining to one or two well-defined areas of the discipline that are common to all parts of the field. Advice concerning the criteria for the collection will be most helpful.

   To organize the concepts within this collection in depth and according to a logical plan, we will use several analytical instruments. Using a multiple approach to subject analysis, as represented by classification, vocabulary and abstracting, will provide valuable data on alternative ways of arranging concepts logically.

2. A draft Classification Scheme will be ready early in 1966 and will enable us to index concepts in documents with a logically derived schema. Reactions of Advisors from the field will be an important determinant in the structure of the scheme.

3. Thesaurus, or Dictionary of Controlled indexing vocabulary is now being collected. This vocabulary is being derived from terms in documents and commonly-used phrases from the practice of the field. It is being ordered through control of synonyms and linkages between related terms of varying levels of generality. Advisor Reactions will be actively sought in assisting us to define terms, phrases and concepts on a rigorous basis.

4. Abstracting. Tentative Rules for Abstracting the content of documents have been compiled. These specify, at present, that documents of "hard" data receive an informative abstract of up to 500 words. Documents of a philosophic or idea content will be abstracted descriptively, at shorter length. Informative abstracts are prepared to stand in the place of the article; descriptive abstracts are indicative of content.

   These abstracts can be used for output, as they are in Continuing Education Abstracts, or as an analytical tool. As a tool, abstracts can be searched by computer for matches of words or phrases specified in a question; or we can also use them to provide counts of the frequency of occurrence of specific words, or co-occurrence of words, to assist in vocabulary building.

Continuing Education Abstracts is an experimental output, derived from the process of transforming abstracts and index terms of the Test Collection into computer-readable form. CEA also is part of the evaluation and synthesis of our multiple approaches to subject analysis. Advisor Reactions will assist us in evaluating 3 aspects of the abstract journal: (i) the type of document being abstracted; (ii) the usfulness of the abstract itself, and (iii) the categories, subject headings, or terms under which the items are displayed.

TEST PHASE

In the test phase, the Test Collection is fully indexed and abstracted. Various tests and computer procedures will enable us to test the power of our routes to subject analysis, so that a high proportion of the relevant documents in the system can be retrieved in answer to questions to the system. The ideal is that all relevant documents in the system, with no irrelevant documents, be retrieved. We call this high relevance and low recall.

1. Questions. One form of test is that of research questions, or problems put to the system by advisors. These will be analyzed (indexed) just as a document is, in order to match the question with the file of organized document references.

2. Profiles. A second kind of question - that of matching a profile of a user's interests, indexed like a

document, to the file of documents on a continuing basis, provides references to incoming documents in a user's area of interest. SDI - Selective Dissemination of Information is a type of search that would supplement an abstract journal, for users who wish to keep "currently aware" of what is being published.

EVALUATION PHASE

Purposes of the two preceeding phases of analysis and testing are to provide data for the evaluation of our multiple approaches to literature ogranization.

Major problems in this phase will be (i) the determination of "relevance", (that is, why documents are or are not relevant to a question) in order to establish criteria for relevance for an operational system; (ii) the selection of one or more effective methods of indexing and retrieving documents to match user needs.

Active co-operation with Advisors and Users in the field will be mandatory in this phase.

APPENDIX 24

CONTROL SUBJECT ANALYSIS

Memorandum: T-D-64 **TO:** Staff and Files **FROM:** Diana October 6, 1965
Internal Use

INTRODUCTION

In an attempt to rigorously control the content and usefulness of the literature, I propose that we discuss distinguishing documents worthy of analysis as follows:

(a) Those documents with substantive data that would meet a users request at a depth and specificity not controlled by traditional library tools;

(b) Those with a philosophical or ideological content, or with a superficial coverage of a topic, that are useful to our field, but whose content is not amenable to, or does not warrant, depth searching.

I suggest that we distinguish between these two groups of literature via selectio code designation, kind and length of abstract, and depth of indexing.

SECTION I. SELECTION CODE

I propose that we use only two codes for literature being analyzed. These are:

A A is applied to those documents with informative, substantive content; actual data that is worthy of depth indexing for retrieval in response to specific questions at a low level of generality. Theses, research reports, substantial historical surveys are the kinds of material I have in mind.

B This code would be applied to useful compendium of general information, philosophical or ideological essays, high level surveys and overviews, broad statements of goals and purposes. These documents are very valuable as an aid, support and stimulating agent to people in the field but do not contain hard data which will be useful in the future.

SECTION II ABSTRACTS

A These documents should have informative abstracts. The documents may be broken into small units if necessary for analysis but indicative abstracts are not sufficient for these materials. I suggest that we raise the limit up to 500 words for these documents.

B These materials may have informative abstracts if the content lends itself to them or they may have indicative or descriptive abstracts. I suggest that a limit of 200 words be placed on these.

MEMORNADUM: T-D-64

SECTION III INDEXING

Introduction. I am proposing different levels of indexing for A and B based on the following premises:

A documents should be entered into the retrieval system to provide a data bank against which to run search requests. They should also be listed in CEA.

B documents should be listed in CEA and held permanently by the Library, but should not be entered into the retrieval system because their content does not warrant depth indexing or searching.

A These documents should be indexed to level 1, (primary terms) to be used in CEA and level 2, (secondary terms) at a more specific level of generality if possible for the retrieval system.

B These documents should be indexed to level 1, (primary terms) only for the subject index to CEA. These documents may or may not be entered into the computer for purposes of computerized CEA or computer produced catalogue cards but they should not be part of the retrieval system.

LET'S DISCUSS

MEMO: T-D-66 TO: Staff & Files FROM: D.J. Ironside Oct. 25, 1965
(Internal Use)

PRO-TEM POLICY ON INDEXING

I propose that:

1. We get all the terms that we have collected listed both alphabetically and grouped in facets, disregarding level of generality in the arrangement.

2. Start re-indexing some of the documents already in process, using above list of terms and WR list as controls.

As a background to this job, I would suggest that there are three kinds of indexing. [I'm drawing here from the work of the API]. These are:

1. Subject cataloging/indexing (subject headings).
2. Concept indexing.
3. Term indexing.

I am defining the above kinds of subject analysis as follows:

1. Subject cataloging/indexing. In this process, words or phrases are attached to documents to inform users what documents in the collection deal with that subject. They do not describe specifically the information in the document. In other words, subject headings specify the subject content of the document or unit of information as a whole. This process attempts to predict the subject of a question that a user will place to the system.

2. Concept indexing. This process attempts to isolate significant individual concepts or groups of data in the document and attach terms from a controlled list to these concepts. Terms are chosen by their exactness to the individual concept, and not by how each term relates to the whole document. Such indexing does not predict questions of searchers, but tries to give a telegraphic picture of the information and concepts in the document. The questions "who, what, when, why, where" will often elicit significant concepts that will require tagging with terms.

3. Term indexing. This process calls for the negotiation of every pertinent word or combination of words in the document, matched to a controlled vocabulary. This is different from concept indexing in the sense that all pertinent words, including modifiers and abstract concepts (e.g. effectiveness, preparation, etc.) are indexed, disregarding their internal relationships to a concept or to each other. Term indexing is probably the most specific, and deepest, of the three kinds of subject analysis.

I propose that we use concept indexing, on a trial basis. To do this I suggest we follow this procedure:

1. Abstract. Prepare abstract, packing it tight with indexable terminology.

2. Concept isolation.

(a) Explore document and abstract and isolate those concepts (symbolized explicitly or implicitly by words or groups of words) which are important. Ask the questions "who, what, why, where, when" and explore document from the point of view of all ten facets that we are using.

(b) Denote all concepts with terms, checking against our vocabulary list for appropriate terms. Apply up to 30 terms for I documents and up to 5 terms for D documents.

3. Terms 1. (Primary term isolation). Re-read abstract and evaluate all terms in order to choose up to five which best describe the content of the document, and lend themselves to exploitation as index terms in CEA subject index. Disregard questions of level of generality in choosing these terms. These terms, although not adequate for an exhaustive search, would be valuable as a quick reference in CEA.

E-BR
AC-
must

FROM:
ERIC FACILITY,
SUITE 601
1735 EYE STREET, N. W.
WASHINGTON, D.C. 20006

BR-5-1019
PA-24

ED020489

FINAL REPORT
Project No. D-152
Contract No. OE5-10-118

ADULT EDUCATION INFORMATION SERVICES: ESTABLISHMENT OF A PROTOTYPE SYSTEM

Part III
Appendices

December 1, 1967

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

APPENDIX 26

TO: Staff **FROM:** Roger 1 Oct 1965

FREQUENCY OF WORDS IN FIRST 150 DOCUMENTS

65 words, some with minor variants, accounted for 815 usages. That is, 5.7% of the words accounted for 35% of all indexing.

Extremely high frequency

education
training
administration
adult education
evaluation
research
teaching
vocational
adult
bibliography
curriculum
finance
manpower
objectives
technical
university

Very high frequency

community
course
development
employment
extension
history
inservice-training
instruction
leadership
learning
legislation
literacy
method
materials
public school
questionnaire
service
women

High frequency

activity
college
credit
federal
film
guidance
organization
rural
school
social
state
teachers
test
text
unemployed
action
age
aging
armed-forces
attitude
conference
cooperation
group
home economics
illiterate
personnel
reading
retraining
student
survey
television
urban
youth

ERIC Clearinghouse
JUL 31 1968
on Adult Education

16% (180) of the index terms were proper names. These were overwhelmingly names of particular organiaations or geographical designations, but there was a scattering of names of languages, persons, tests.

The word count from the first 70 documents was 712; from the merged list of 150 documents the word count was 1137. It would appear that about 400 new index terms were added from the second set of eighty documents. But this is definitely not so, for most of these seemingly new terms are simply plurals of words used before, or obvious combinations from terms used separately, or proper names.

On the average, no more than ONE new term per document was added from the second set of eighty documents. This indicates to me that we have the basic set of concepts to be indexed before us. And the best way to add new vocabulary quickly is dilberbately to seek out documents from parts of the field we feel have not been adequately represented so far.

APPENDIX 27

TERM CLUMPS
FOR DISCUSSION

MEMORANDUM: T-D-70 (rev.) TO: Staff & Files FROM: D.J. Ironside
November 11, 1965

1. PEOPLE
    - Individual
        - Occupation e.g. lawyer
        - Societal role e.g. immigrant
        - Interpersonal role e.g. parent
        - Education role e.g. student, leader
    - Group
        - Institutional role e.g. industry, university
        - Work role e.g. faculty, management
        - Interpersonal role e.g. family
        - Education role e.g. audience

2. MODIFIERS/CHARACTERISTICS
    - (Of Individuals)
        - age
        - sex
        - marital status
    - (Of States of Being)
        - physical
        - psychological, emotional
        - sensory
        - mental development, processes
    - (Of Socio-economic factors)
        - Economic status e.g. low-income
        - Social class e.g. working class
        - Political affiliation
        - Religious affiliation
    - (Of Locations and things)
        - rural
        - urban
        - national

3. ACTIVITY
    - Work (aspects of)
        - Arrange (plan)
        - Administer (Analyze for implementation)
        - Financial support
        - Communicate (Implement)
            - Teaching
        - Recipient
            - Learning
        - Evaluation
            - Measurement
    - Leisure
        - Sports
        - Cultural activities
        - Social responsibilities
4. THINGS
    - Facilities
    - Objects and Equipment
    - Aids and Devices (learning and teaching)
    - Curriculum (Subject matter)
5. APPENDIX IDENTIFIERS
    - Geographic locations
    - Specific institutions
    - Specific time
    - Specific processes
        - Aids & devices
        - People
        - Tests

APPENDIX 28

EDUCAND

CHARACTERISTICS

A. AGE

young adult 15-30

adult 30-40

middle age 40-65

old age 65-over

retirement

pre-retirement

aging

aged

B. SEX

man male
or
woman female

C. FAMILY STATUS

single

married

parent

non-parent

dependents

child

family

home

widowed or divorced

D. INTELLIGENCE

I.Q.

I.Q. below 90

literate

illiterate

functionally illiterate

retarded

normal

superior

E. EDUCATIONAL LEVEL

no schooling

elementary school

high school

high school graduate

college undergraduate

college graduate

post graduate

drop-out

F. OCCUPATION

Employed
Unskilled labor

farm laborer

service worker

OCCUPATION (continued)

- sales worker
- manual laborer
- housewife
- shop assistant
- cashier
- cook
- demonstrator, sales
- municipal employee ?
- labor union? teamster?
- waiter
- volunteer
- industry?

Skilled labor

- apprentice and trainee
- accountant
- secretary
- barber, beautician
- carpenter
- clerical and related
- craftsmen
- decorator ?
- designer
- draftsman
- electrician
- engineer, mechanical, civil, industrial
- engraver
- machinist
- machine operator
- optician
- painter
- pharmacist
- photographer
- shop, steward
- technician

Professional

- actor
- teacher
- dentist
- lawyer
- banker
- scientist
- clergy
- administrator
- economist
- librarian
- editor
- engineer
- government agent

F. OCCUPATION (continued)

Professional (continued)

- mathematician
- musician
- artist
- nurse
- official
- optometrist
- osteopath
- physician
- psychologist
- supervisor
- veterinarian
- student
- intern

Civil Service

Armed Services

Unemployed

G. INCOME

- earnings
- poor
- low income
- white collar
- high income
- salary

H. PSYCHOLOGICAL CHARACTERISTICS

- emotional stability
- apathy
- complacency
- self-concept
- behavior
- attitude
- anxiety
- expectation
- mental health
- awareness
- motivation
- personality

I. RELIGION

- Protestant
- Catholic
- Jew
- Christian Science
- Mormon
- non-religion
- other
- Christian (either not named or including Protestant and Catholic)

J. RACE

- white
- Negro
- Mongoloid

K. COMMUNITY INVOLVEMENT

Political preference

- democrat
- republican
- independent
- other preference

Organization member

- non-member

Relationship with neighbors

L. INTERESTS (?)

leisure time activities

change of interest

role of environment

academic interests

OBVERSE THESAURUS: A CLASSIFICATION
SUMMARY AND TABLES

TO: Staff & files FROM: Roger 1 May 1966

Attached is an effort to see what sort of "classification" could be extracted from our list of indexing terms. We all know that a structured thesaurus can be turned around into a classification scheme, but we need to look closely at precisely what this means in our own work. Since we have so far deliberately avoided much structure (i.e., specifying relationships among terms), this derived classification is simply one of many possible ways of ordering the terms.

Notice the vast areas of continuing education nowhere mentioned in this "classification." These are areas where we have not yet GOT THE TERMS OUT. Many of these gaps could be filled out of our heads, but I am content to wait for the needed terms to emerge from indexing.

Since we have picked our terms up one by one, there are some weird hierarchies apparent when one tries to fit them together. For example, in many places we have very broad terms and very specific ones, but nothing between. Notice that some terms fit in several places. In fact, whole sections can fit in several places. This is the key problem of viewpoint. Terms can take various roles depending on the viewpoint from which you observe or classify them. Will indexing by a classification help us control this problem?

I expect a term or two are mis-classified. When they are put in their proper place, however, their meaning will be revealed by the related words. Classifying or structuring defines terms. If this were not so, we would need a written definition of every term.

Some expressions in parentheses have been added for intelligibility. Otherwise this classification has been derived entirely from the key words we have selected as indispensable for indexing the concepts thus far encountered in the literature.

THIS IS THE LIVING LANGUAGE OF ADULT EDUCATION. THESE ARE THE SALIENT AND VITAL CONCEPTS WHICH UNDERLIE THE WORK OF THE ADULT EDUCATOR.

ADULT EDUCATION
OBVERSE THESAURUS: SUMMARY

PERSONS, PERSONAL ATTRIBUTES AND CHARACTERISTICS

I. DEMOGRAPHIC CHARACTERISTICS

II. PSYCHOLOGICAL CHARACTERISTICS

III. MENTAL ABILITIES

IV. PHYSICAL CAPACITIES

V. NEUROLOGICAL CONDITION

VI. EDUCATIONAL ROLE

ORGANIZATIONS

I. EDUCATION GIVING/ SPONSORING AGENCIES
ADULT EDUCATION A DIRECT, MAJOR PURPOSE

II. EDUCATION GIVING/SPONSORING AGENCIES
ADULT EDUCATION A COLLATERAL PURPOSE

III. COORDINATING AND FACILITATING AGENCIES

METHODS AND TECHNIQUES FOR THE EDUCATION, TRAINING AND RETRAINING OF ADULTS

illustrates the
hierarchic breakdown
of this section

I. INDIVIDUAL ORIENTED

II. GROUP ORIENTED

III. COMMUNITY ORIENTED

IV. MASS CONTACT

INSTRUCTIONAL MATERIALS AND DEVICES

I. INSTRUCTIONAL MATERIALS

II. TEACHING AIDS

III. SPECIMEN

IV. RECORDING-PLAYBACK MACHINES

V. PROJECTION DEVICES

VI. MAGNIFICATION, MINIATURIZATION DEVICES

VII. TEACHING MACHINES

VIII LANGUAGE LABORATORIES

IX. READING DEVICES

X. SIMULATED ENVIRONMENT

XI COMPUTER

CURRICULUM FOR ADULTS

I. HUMANITIES

II. SOCIAL SCIENCE

III. PHYSICAL SCIENCE

IV. BIOLOGICAL SCIENCE

V. VOCATIONAL EDUCATION

VI. EDUCATION FOR SPECIAL GROUPS

VII. PROFESSIONAL,OCCUPATIONAL GROUPS

VIII. NON-CONVENTIONAL ASSEMBLAGE OF SUBJECT MATTER

EDUCATIONAL PERSONNEL

I. INSTRUCTIONAL PERSONNEL

II. EDUCATIONAL ADMINISTRATORS

III. VOLUNTEER WORKERS

IV. GOVERNING BODIES

V. PROFESSIONAL TRAINING

VI. STAFF DEVELOPEMNT

VII WORKING CONDITIONS

VIII. SALARY

IX. BENEFITS

EVALUATION

I. EVALUATION THEORY

LL. ACHIEVEMENT"

III. INSTITUTIONS AND PROGRAMS

IV. TEACHERS AND PROFESSIONAL WORKERS

V. PARTICULAR LEARNING EXPERIENCES

VI. ORGANIZED CURRICULA

VII. EVALUATION TECHNIQUES

EDUCATIONAL FACILITIES

I. BUILDINGS

II. EQUIPMENT

RECRUITMENT, ADMISSION, RETENTION OF STUDENTS

I. RECRUITMENT

II. ADMISSION

III. ATTENDANCE

IV. DROPOUT RATE

STUDENT SERVICES

I. HOUSING

II. FOOD SERVICE

III. LIBRARY SERVICE

IV. FINANCIAL AID

V. EDUCATIONAL COUNSELING

VI. PERSONAL COUNSELING

VII. VOCATIONAL COUNSELING

FINANCE

I. SOURCES OF SUPPORT

II. EXPENDITURE

RESEARCH METHODS

I. RESEARCH THEORY

II. METHODS

III. TECHNIQUES

ADMINISTRATION

I. ORGANIZATION OF THE EDUCATIONAL ENTERPRIZE

II. COORDINATION

III. INTERINSITUTIONAL COOPERATION

IV. PUBLIC RELATIONS

V. INTEGRATION

UNDIGESTED TERMINOLOGY

METHODS AND TECHNIQUES FOR THE EDUCATION, TRAINING AND RETRAINING OF ADULTS

Hierarchic breakdown of one section

I. (INDIVIDUAL ORIENTED)

- A. Independent study
- B. Correspondence study
- C. Tutuoring
    - individual help
- D. Programmed instruction
    - Crowder programming
    - linear program
    - branching
    - cueing
- E. Consultation
- F. Conversation
- G. Farm visit
- H. On the job (job related training)
    - in-service training
    - apprenticeship
    - internship
    - work study (cooperative education)
    - field work

II. (GROUP ORIENTED)

- A. Class
- B. Discussion
    - group discussion-discussion group
    - brainstorming
    - buzz group
- C. Lecture
    - sermon
    - telelecture
    - lecture-demonstration
- D. Audiovisual
- E. Games
    - game theory

F. Simulation

G. Field trip

H. Residential

    bull session (i.e., out of class interaction)

I. Conference

J. Meeting

K. Clinic

L. Institute

M. Forum

N. Panel

O. Symposium

P. Work shop

Q. Role playing

R. Demonstration

    home demonstration
    method demonstration
    result demonstration

S. Debate

T. Group process

    group counseling
    group therapy
    laboratory training
    sensitivity training

        T group
        E group

    human relations training

III. (COMMUNITY ORIENTED)

A. Community development

B. Community organization

IV. (MASS CONTACT)-Mass Media

ARadio-broadcasting

FM radio
network

B. Television

closed circuit
open circuit
airborne television

ETV
instructional tv

network

C. Bulletin

D. (DIFFUSION 0F) INNOVATION

adoption
personal influence
adoption period

```
AL20000300    UF TEXT

AL30000000 T-GROUP

AL30000050    SN  A SMALL LEARNING GROUP IN WHICH THE GROUP PROCES

AL30000051         SUBJECT OF STUDY.

AL30000800    RT   TRAINING-LABORATORY

AL40000000 THEATER

AL40000050    SN THE FACILITY.

AM50000000 THEATER-ARTS

AM50000050    SN COURSE OF STUDY.

AM60000000 THEOLOGY

AM60000200    U  RELIGION

AM70000000 THEORY

AM70000050    SN USE ONLY IN VERY STRICT SENSE, FOR SERIOUS STUDY,

AM70000051         SENSITIVITY TRAINING AREA.

AM80000000 THIRTY-FIVE-MM-PROJECTOR

AM80000800    RT EIGHT-MM-PROJECTOR

AM80000910         SIXTEEN-MM-PROJECTOR

AM85000000 TIME-SAVING

AM90000000 TOOLMAKER

AM95000000 TRACKING

AM95000050    SN THE ACT OF FOLLOWING OR PLOTTING THE MOVING PATH
```

APPENDIX 3

MEMO: T-RM-80 **TO:** STAFF AND FILES **FROM:** Ron Miller June 15, 1966

SUBJECT: Thesaurus production and updating by IBM punched cards, 082 sorter, 407 accounting machine

We are presently experimenting with the production and updating of our in-house thesaurus of indexing terms in adult education with special emphasis on adult learning.

The steps involved in this process are as follows:

1. A typed single column alphabetic listing of main terms and their followers is used as a master working document. (The sources of the terms are outside the scope of this memo)

2. Sequence numbers are assigned with intermediate gaps to allow for 1000 possible insertions.

3. These numbers are assigned to columns in tab cards as follows:

Card columns	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 - 80
1st term card	A	A	0	1	0	0	0	0	0	0	@	A	B	1	L	I	T	Y
Last term card	Z	Z	9	9	0	0	0	0	0	0	@	Z	0	0	L	O	G	Y

Term

always 2 alphabetic characters

main term assigned number

always numeric characters

causes triple spacing on print ou

a. The first 6 punched cards are separated as follows (preserving same column arrangements as above):

Card columns	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 - 80
	A	A	0	1	0	0	0	0	0	0	@	ABILITY						
	A	A	0	1	0	0	0	0	5	0					SN			POTENTIAL
	A	A	0	1	0	0	0	3	0	0					UF			CAPACITTY
	A	A	0	1	0	0	0	3	3	0								CAPABILITY
	A	A	0	1	0	0	0	8	0	0					RT			APTITUDE
	A	A	0	2	0	0	0	0	0	0	@	ABLE-BODIED						

Same number used with main term & its followers

indicate follower terms of main term

4. The numbering scheme allows for approximately 67,000,000 main terms (terms preceeded by @).

5. The digits in columns 8,9,10 allow for the following breakdown (see 3 above) of follower terms:

		Abbrev.	Assigned nos.	Range in digits
Scope notes	=	SN	050-199	150
Use	=	U	200-299	100
Use for	=	UF	300-499	200
Narrower terms	=	NT	500-699	200
Broader terms	=	BT	700-799	100
Related terms	=	RT	800-899	299
				950 possible insertions under any main term

6. Every time a main term, or follower term is

   a. added - a tab card is punched preceeded by a number mid-way between the term immediately before and immediately after the new term;

   b. deleted - the cards are manually pulled from the file of cards;

   c. modified - the modification is repunched with the originally assigned number and the old term pulled from the file.

7. All cards are sorted by the assigned number, then printed using our own 407 plugboard which is stored in Carnegie Library's data center. Six-part forms are used, allowing six copies to be printed at once. These are burst, bound and distributed to our staff as often as revisions are required. Should we need more than six copies, two printing runs are made, or multilith masters are used instead of 6-part forms, and each page is duplicated and bound.

If we find that our number gaps become too crowded, arrangements will be made to assign new number increments to a new deck of cards by the Computing Center. Hopefully we won't have to do the latter, but we can if needed.

Depending on what ERIC plans to do with the thesaurus, we have the capacity to merge other thesauri at Syracuse with this method, or, more likely, we can send our thesaurus to anyone in mag tape or punched card form.

This process can be the first feeble step in the computerized updating and presenting of the thesauri from the documents themselves, as well as automatic table look up for searching purposes, as well as statistical reporting of term use, frequencies of term combinations, etc. Or it can end at this stage.

Problems and revisions in this method will be reported as often as required.

SUPPLEMENT TO LCE THESAURUS

TO: Staff and Files FROM: Edith Bennett December 27, 1966
"For internal use only"

ADAPTATION

ANIMATION

ART-EDUCATION

AUTHORITARIAN

BANK-TELLER

completion-rate

U. DROPOUT-RATE

COMPLETION-TIME

S.N. Time taken (or allowed) to complete a correspondence course

COMPUTER-AIDED-INSTRUCTION

U.F. computer-assisted-instruction

computer-based-instruction

COMPUTER-AIDED-PROGRAMS

S.N. Specific programs, such as Plato, Socrates, etc.

computer-assisted-instruction

U. COMPUTER-AIDED INSTRUCTION

computer-based-instruction

U. COMPUTER-AIDED-INSTRUCTION

COMPUTER-TECHNOLOGY ?
COMPUTER-TECHNIQUE ? WHAT shall we use?

congregate-home

U. SHELTERED ENVIRONMENT

COMSUMER-COOPERATIVES

B.T. COOPERATIVES

R.T. CONSUMER-EDUCATION

SUPPLEMENT TO LCE THESAURUS

COOPERATIVES

N.T. CREDIT UNIONS
CONSUMER COOPERATIVES
PRODUCER COOPERATIVES
COOPERATIVE HOUSING
COOPERATIVE INSURANCE
CENTRAL COOPERATIVE ORGANIZATION

COPYRIGHT

CRITERIA

DEMOCRATIC

EXTENSION METHODS

EXTRA-MURAL-DEPARTMENTS

FIELD-TEST

FIELD-TRIPS

R.T. tours
farm-visit
etc ?

foreign-languages

U. LANGUAGE

group-training

U. TEAM-TRAINING ?

homesickness

JOB-ROTATION (Job Environment, developmental assignments

KNOT-TYING

LANGUAGE

N.T. ENGLISH-LANG
FRENCH-LANG
etc.

HOW HANDLE SECOND LANGUAGE?
SECOND-LANGUAGE-LEARNING ?

LANGUAGE-INSTRUCTION

N.T. AUDIO-LINGUAL-METHODS

live-in

U. RESIDENTIAL

SUPPLEMENT TO LCE THESAURUS

LOW-INCOME-FAMILIES

MASS-MEETING

MEANINGFULNESS Is this on continium with nonsense-learning?

MILITARY-TRAINING

or

ARMED-FORCES-TRAINING

neo-literates

U.

old-peoples-home

U. SHELTERED ENVIRONMENT

PHYSICAL HEALTH

PRACTICE-DISTRIBUTION

B.T. PRACTICE
N.T. MASSED-PRACTICE
DISTRIBUTED-PRACTICE

PREVIEW

PRODUCER-COOPERATIVES

B.T. COOPERATIVES
R.T. BUSINESS (STUDY)

PUBLIC-HOUSING

reading accelerator

U. READING-PACER

reading-comprehension

U. READING PACER

SCIENCE

SELECTION-CRITERIA

self-tutoring

U. INDEPENDENT-STUDY

SLIDERULE

SUPPLEMENT TO LCE THESAURUS

SOCIAL-STUDIES

SPEECHES

S.N. Use as form term

STUDY-CIRCLES

R.T. GROUP-DISCUSSION
STUDY-DISCUSSION

STUDY-GUIDES

SYSTEMS-ANALYSIS

TARGET-DETECTION

TASK-ANALYSIS

TEACHER-ORIENTED

TIME-SHARING

TRAINING-CAMPS

URBAN-EXTENSION

WORK-EXPERIENCE

R.T. EXPERIENCE

APPENDIX 33

THE LIBRARY OF CONTINUING EDUCATION at SYRACUSE UNIVERSITY

TO: Advisory Panel on Terminology FROM: LCE Staff December 13, 1965

We would like to outline some of the problems of subject analysis and vocabulary control which have emerged in our project at the Library of Continuing Education at Syracuse University where we are working to design new information services for the adult education profession. Some of the questions which engage our attention are perhaps unique to the type of services we are planning, but we expect that most of them are typical of problems that will arise in many educational information services.

We have found terminology and subject control questions in many aspects of our work, beginning with the operation of a large library which is presently organized in conventional manner, using a specially devised classification. We hope to revise and greatly improve this classification both for the benefit of other libraries which may collect in our subject area and, possibly, as a means of displaying the terms of the coordinate indexing thesaurus on which we are also working. We have looked, therefore, at many types of classification schemes, especially those developed through principles of facet analysis. We feel there is much to be done in subject control of educational literature through the use of classification, subject headings and other seemingly conventional procedures. Especially, we believe that the relation of these methods to other indexing and analytical procedures calls for continued investigation.

Terminology problems stem from our attempt to incorporate foreign language research or literature. Translation services are needed. Indexing and thesaurus building are affected, not only because the terms require translation, but also from the forms that adult education work takes in other cultures do not precisely match our own. Multi-language dictionaries of educational terms and many other cooperative devices are needed to attack these problems.

Thinking and planning for accessions lists, newsletters, abstract bulletins or other ways of making our collections known have raised other terminological problems. For example, if we were to put out a fairly comprehensive listing on a regular basis, could we relate the subject index of this to the index terms used for coordinate indexing? Could we use the same classification which organizes our library to arrange the listing? Since we are exploring the use of computers and

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other devices in our planning, we have examined systems which work from a common data base for the production of various services. Thus, we have been driven to consider the terminology problems in one part of our project in relation to those in other aspects of the work.

Any mechanical device for handling information carries with it implications for the form of terms to be used. As one example, with our present equipment, we can use terms exceeding 20 characters only with great difficulty.

Coordinate indexing leads most directly to confrontation with the problems of educational terminology. This vocabulary is nearer to the English language end of the "indexing continuum" than to the relatively "hard" technical vocabulary handled by many of the more mature information retrieval systems. Such, at least, is our observation in the studies of adult education we index. This led us to investigations of some computer operated natural text searching systems and of the techniques for automatic indexing, abstracting and classifying, which seem likely possibilities for the future. At this moment, we see that these techniques are not yet feasible. Yet they have important implications for our thinking about terminology control problems over a period of time.

In our thesaurus building efforts we confront specific questions: To what extent should flexibility of analysis be sacrificed to economy by binding common terms? How do we decide what levels of detail and generality to build into the thesaurus? Should we be trying to index terms, i.e., the words themselves, or the specific concepts which are often latent behind the terms (we have dubbed this the "tacit problem"), or broader subjects? How do these decisions relate to size of the file and to various types of questions which may be put to the system? At what point do frequently used terms lose their discriminating power and simply clog the system? Can these types of problems be investigated in a file of (say) 1500 documents with the expectation that the results will stand up when the file grows much larger?

Still another fundamental terminology question confronts us. Since adult education has developed in several types of situations, to a great extent isolated from each other, is there enough commonality of assumptions and vocabulary across the wings of the field to serve all with one system? Or should we be developing relatively independent micro-thesuari with some common core of terms? We cast about for some way to attack this question. Since we have computer programs capable of it, we would like, if circumstances permit, to experiment with word counting from samples of machine readable text selected from several parts of our field. Would comparison of the words actually used in these documents provide guidance? Could some actual statistical measure of the commonality of vocabulary be devised?

We are interested generally in how computer word counting might aid in thesaurus building. We hope to do some small experiments to compare actual word counts from abstracts with the index terms selected by our indexers when instructed to do free indexing based on the actual words of the document. What would be revealed about the mental processes of the abstractor-indexer if we could compare words lists from the documents themselves, the abstracts, and the index terms selected? Lack of machine readable text is the only hindrance to this type of work.

When we have settled on terms we judge useful to our adult education audience, how willing should we be to adjust our usage to bring it into congruence with use in other information projects with which we would like to share work? We can speculate that when our systems have output the context will in most cases adequately reveal how we are using terms and that we will seldom need to be rigid in our vocabulary requirements, but only cooperative experience will give us useful knowledge about these matters.

Even purely mechanical problems arise in vocabulary building. As the list grows, how are the terms recorded and kept track of? We have been punching the terms on cards and periodically printing off revised lists. Slips are used to record decisions on meaning, if they are more than a simple scope note can handle. Other slips are used to introduce new candidates for the term list.

These are some samples of the terminology and subject analysis considerations which have arisen in our work. We will be happy to share these problems with colleagues in other educational information services. Some are unique to our situation, but most will arise in one or another form in various projects and they are likely one by one to come to the attention of the Advisory Panel on Terminology.

If the Panel, in addition to its work directly in support of the ERIC project, would concern itself with a long-range view of terminology control and subject analysis in education, it could be most helpful to us all. It might, for example: (1) promote meetings and other forms of inter-change of experience between projects with similar problems; (2) help the projects to inventory the experience and intellectual resources already on hand in the group and, especially in the universities represented; (3) help us find and engage qualified people to survey the state of the art in various parts of information retrieval with reference to what has been learned useful to us in our terminology work; (4) sponsor or fund training or briefing sessions to introduce new people to a basic understanding of coordinate indexing, thesaurus building, etc.; (5) seek out sources of funds for research and experimentation from the National Science Foundation or others; (6) coordinate and facilitate our interaction with efforts to standardize forms of bibliographic citations within the government and, in general, help us draw into the mainstream of information work in government agencies; and (7) help us to evolve a common thesaurus and other tools of subject analysis.

In any or all efforts of this type our project staff will be willing to help in any way we can and we are grateful for this opportunity to make suggestions to the Panel.

LIBRARY OF CONTINUING EDUCATION

ADULT EDUCATION INDEXING

To: Adult Education Colleagues

From: Library of Continuing Education Date: February 25, 1966

The Library of Continuing Education at Syracuse University is engaged in a three-year planning project to design improved information services in the field of adult education. This work is supported, in part, by a contract with the Cooperative Research Program of the U. S. Office of Education, and is intended to make the extensive collections of adult education literature being maintained by LCE useful to a wide range of adult educators throughout the country.

A computer-aided information retrieval system is one of the possible services we are exploring. Since such systems are based on thorough and consistent indexing of documents or their abstracts, we are developing a controlled vocabulary of terms. This vocabulary will enable us to retrieve documents quickly and precisely by searching on the terms designated in an experimental thesaurus of adult education concepts.

The word list attached to this memo is the first stage of preparing a thesaurus of concepts for indexing purposes. The terms in the word list have been collected through intensive analysis of several hundred documents during the past six months. The documents indexed were a random sample of new documents and recent acquisitions to the collections of the LCE. After the index terms were collected, our staff worked through them from A to Z, admitting what appeared to us to be the most useful index terms, and throwing out synonyms and terms denoting irrelevant concepts. We are now using this word list as a basic tool in indexing documents in our Test Collection [see memo entitled A Collection of Studies of Adult Learning for Experimentation with Document Retrieval Techniques, February 9, 1966]. To this word list we will be adding continually new terms as they arise in the analysis of Test Collection documents. This means that the word-list will be continually growing, enabling us to accurately index important adult education ideas in the literature on a consistent basis.

INDEXING

Before we ask your help in developing the word list, we should tell you what we mean by indexing and why we are developing a controlled vocabulary of indexing terms. As you will be aware, the usual practice in libraries is to assign subject headings to documents in a card catalog. These subject headings generally connote the overall topic of the document or study and do so at a very high level of generality. Depending on the library, a document may have anywhere from one to six subject headings, but rarely does it have more. We are using subject headings also in our card catalog and these are applied in the traditional way: i.e., they represent the overall topic or topics of the document. In addition to this traditional approach to subject analysis, we are attempting to index important concepts within documents, so that information and concept in documents can be retrieved whether they have anything to do with the overall subject heading or not. A document may have anywhere from 5 to 50 index terms applied to it, in addition to subject headings, so that all the significant information in that document can be retrieved.

Many information systems pull out all the significant or key words in a document or abstract and use these as index terms. This depth of indexing does not seem to us to be appropriate to our literature, since terminology is imprecise and changing, and concepts themselves, unlike scientific and technological concepts, cannot be precisely described with a term. This is why we are not using the actual words used within a document or abstract as index terms, but are attempting to seek out the most significant concepts within a document and to tag these with appropriate terms. We see this approach of concept indexing as being mid-way between term indexing [that is, negotiating the words of the document] and subject headings. The terms in our word list are, hopefully, those which will be useful to tag significant concepts.

Your help is earnestly solicited at this point. All terms in this word list are accepted as indexing terms on a tentative basis only, for experimental purposes. It will be most useful, therefore, if we could get some common agreement in the field about the validity and usefulness of the vocabulary, and agree on definitions for many troublesome concepts. We note below the specific ways in which you can help us.

1. Synonyms. We have put a number of "see" references in this list but no doubt there are many more synonyms of the accepted terms, that we have missed. Please add to the list any terms that you would judge to be synonyms of the accepted terms. If you feel there are synonyms among the accepted terms, PLEASE INDICATE.

2. Problem terms. All those terms in the list with an asterisk are terms we recognize as problems for us, both in defining the concept the term represents and in matching an appropriate term to the defined concept. We are most anxious to have your help in thinking through problem terms and concepts. Many non-starred terms may represent problem areas of which we are unaware. Please feel free to indicate difficulties in shades of meaning where you see them.

3. New terms. Although this is our first word list and is very incomplete, it will be helpful to have terms added at this stage which you feel represent significant concepts in the field. When you add such new terms, it would be helpful if you would add a brief scope note or definition.

4. Accepted terms. All terms in this WORD LIST, as we say above, have been tentatively accepted as indexing terms. Any comments, scope notes, criticisms, etc. that you can make on the terms we have chosen would be very helpful. We are anxious to use terms that have precision, currency and significance to our users, and your comments on them will help us to determine if these criteria are being met.

5. Your profile of interests. It would be helpful to us if you find it possible to circle those terms which represent concepts of particular interest to you in your work or research. If such terms are not in the list, please add and circle them. We will then make up interest profiles of you as a potential user and this will give us some concrete help in determining information interests and needs in the field.

PROBLEMS IN INDEXING

We would like to point out to you a few of the problems and general areas of difficulty that we have found in indexing some of the professional literature. Any comments or advice that you can give us on these questions would be helpful. The following paragraphs are examples of problems that arise in the discussion of certain concepts, and these are here to help you see the dimensions of the problem under discussion.

AGE

We're concerned about how best to index the age of the adult participant, when age is a significant variable in a study. You will note that under Age in our word list, we have broken these down in the following way: Age 15-25, YOUTH: Age 25-45, ADULT: Age 45-65, MIDDLE-AGED: Age 65 on, AGED. This is an attempt to index the age of participants at what appear to us to be useful breaking points. Are these the critical breaking points in adult education in your view? Should we break down more finely? Could we derive more relevant or useful categories from the research literature of the life cycle, etc.?

RESEARCH METHODS

When indexing research reports, we want to index the methods used in the study. Which do you think are the significant aspects in research

DRAFT
DIRECTIONS FOR ABSTRACTING

September 12, 1966

This manual provides instructions for the Literature Analysts who prepare abstracts of adult education literature in the Library of Continuing Education at Syracuse University.

PURPOSES OF THE LCE INFORMATION SYSTEM

LCE is engaged in a three-year experimental program to design information services which will make its adult education collections useful to the entire adult education profession. The principle services we hope to provide are: (1) a comprehensive listing of current publications in the field, published in a classified arrangement with an author and detailed subject indexes and with annotations or abstracts of important documents; (2) a retrieval system based on deep and consistent indexing of informative documents, using abstracts as the response to questions from users in the field.

The usefulness of these services will depend on the thoroughness and clarity of our abstracts.

We serve a field in which thousands of professional educators guide the work of hundreds of thousands of part-time and voluntary workers in providing educational programs to some 25,000,000 American adults each year. The vastness and diversity of our field is directly reflected in the volume and form of the literature we analyze in the LCE system. Books, research reports, program descriptions in mimeographed form, microfilmed dissertations, and many other types of documents come to us from scattered sources. They have been written for many purposes and often for specialized audiences. From this range of literature, LCE subject specialists select those documents which seem most informative and potentially most useful to our colleagues in the field.

DIRECTIONS FOR ABSTRACTING

Our purpose in abstracting is to condense or describe the author's work with the greatest clarity, precision, and economy possible. Accuracy and fidelity to the document are essential. This drastic reduction of a text, however, will always require judgment and discrimination from the abstractor and in exercising this judgment the following basic viewpoints of LCE should be held in mind.

The LCE is especially concerned to help improve the practice of adult education by encouraging the use of knowledge and experience from all parts of the field. We should, therefore, always be alert for information, accounts of experience or insights which could lead to improved decision-making or educational practice and which could be of immediate and general application in many situations. Second, LCE hopes to help the emerging adult education profession use and rapidly extend its store of tested knowledge, as the best long-range route to improved educational practice throughout the field. Therefore, we should be especially alert for research findings, critical analyses of experience, cogent thinking or new ideas which contribute to this body of tested knowledge.

ANTICIPATED USERS: FOR WHOM ARE WE ABSTRACTING?

The literature of adult education is useful to a wide variety of persons working in, or interested in, the field. These include teachers of adults in a variety of formal and informal educational settings, program planners, administrators at all levels, legislators, the news media, and many other groups.

The primary users of the documents we judge worth abstracting and indexing will probably be a narrower group with sustained involvement in the profession as full-time and relatively permanent workers or with professional training in adult education. Though many, indeed most, of these people work in and are most familiar with one segment of the field, we may assume that they have acquired basic understanding of adult education terms from their length of association with the field.

DIRECTIONS FOR ABSTRACTING

Some 500 persons have received Ph.D.'s in adult education and several hundred others have training at the Master's level. These are scattered in strategic positions throughout the field, forming a cadre of professionals with heavy responsibility for training and direction of thousands of teachers and other workers. They are key conveyors of information themselves and will be key users of our abstracts. For convenience we may call this group the "professionals." We may assume a common core of knowledge in this group which enables us to use the summarizing power of the adult education technical vocabulary as a tool for condensing some of the diffuse and rambling presentations often encountered in our literature.

Though we write primarily for this professional group and our first responsibility is to serve their information needs, there will be numerous collateral users with needs to consider. Librarians and others collecting the literature for various purposes will use the abstracts to decide which documents to acquire. Information centers in other parts of education and the social sciences will use them for their own purposes, which may be quite tangential to our basic intent in writing them.

How will the users encounter the abstracts? They will most often be seen in the dissemination bulletin we propose to publish. Here all the useful documents coming into our system will be listed in classified order. Perhaps one-fourth of these will be abstracted.

The user will likely turn first to the subject area of most interest to him and look carefully at the abstracts, for this is where he hopes to find something directly useful to his own work. Hopefully, he will then browse or scan related areas of interest. The more help we can give him in this scanning, by clarity of writing, summaries in the initial sentences of our abstracts and other devices, the more scanning he will do. Finally, he may locate the abstract by using the detailed term index. In this case, he is probably looking at the abstract to find information on a second or third level subject in the document, for we will always try to print the abstract under its main subject. Completeness and orderliness of the presentation in the abstract will help him to spot these second or third level themes easily.

Many abstracts may appear in more general dissemination bulletins published by the U.S. Office of Education or by information centers in other parts of education. Administration of adult education programs is, for example, of interest to students of educational administration in general and our abstracts on this subject will be picked up in publications intended for that group. This collateral use of our abstracts will be very extensive.

Users of our retrieval system, and we must assume these will be mostly from the adult education professional group described above, will receive copies of the abstracts in response to questions they put to the retrieval system. For this purpose, accuracy and completeness of the abstract are essential, for the searches may often be for quite specific information. We must be able to depend on the presence of significant information in the document itself when such information is intimated by the abstract.

Consider a query to our retrieval system in which the questioner, on the basis of the abstract sent to him, goes to the trouble of obtaining the document itself, only to find a trivial handling of the subject of interest! The implications of this horror are clear: the abstractor must seek out the significant concepts in the document for emphasis in the abstract, eschewing detail which is not central to the author's purpose.

Having mentioned now some of the purposes and priority users to consider in those many cases where discretion and judgment will be required of the abstractor, let us emphasize the basic rule of abstracting: condense the author's work with utmost clarity and fidelity, reflecting his purposes and his intended audience of readers.

TYPES AND PURPOSES OF ABSTRACTS

A descriptive abstract serves as a guide to the document, but not as a substitute for it. In this type of abstract, the analyst acts as a reporter describing precisely what is included, in what manner it is presented, to whom it is addressed, etc. He does not attempt to summarize the intellectual content of the document.

The descriptive abstract should enable the reader to determine with assurance whether he wants to obtain the document for his own use. It tells him exactly what the document is about. It may be brief and seldom should exceed two hundred words. It can often be prepared largely by listing, perhaps with clarification, the chapter or section headings. Or, it may often be an edited extract from the text in which the author states his purpose and coverage. The descriptive abstract must, however, always mention all important information elements, including those which may be in preliminary matter or appendices.

> Staff development and human relations training; a handbook of materials for use in West African training programs. Nylen, Donald. and Mitchell, J. Robert, jt. auth. New York, Ford Foundation, 1962? 227p.
>
> Collection of training materials for a civil service training program in English-speaking West African countries. Brief discussion on cultures and taboos, followed by lecture materials, exercises, demonstrations, and skill practices relating to human relations. Appendix includes various analysis forms, rating scales, and a sample training institute program. 54 refs.

Informative abstracts serve all the functions of the descriptive abstract and in addition provide a succinct and accurate summary of the principal findings, arguments, or conclusions of the author. Informative abstracts are more useful and should be prepared whenever the content can in fact be accurately summarized. Do not attempt to prepare summaries thorough and complete enough that they can substitute for the document for the purposes of those most interested in the particular subject. These people will usually know about the document already from personal contacts with the author. If they are vitally interested, they will never be content with any summary you can provide.

For many other users, however, the abstract may indeed serve the reader's purposes so that he need not seek out the document itself. Many users need to keep up with developments in many parts of the field to which they cannot devote their full attention. They appreciate _brief_ summaries of the _major_ points of the document.

These summaries must be worded so that the reader is aware that only the main points are being summarized. The presence of more detailed data or conclusions must always be indicated. Always look for the _author's_ summary or _his_ assertions of what is of most importance. Use your own estimate of importance only when the author has not given you this help. Do not pick out a few of many findings or main points in a series of seemingly equal importance; try instead to summarize the whole series. Citing the findings or main thoughts in the abstract gives them great prominence, so be sure they accurately reflect the document.

Since informative abstracts give the main findings or summarize the author's chief points or conclusions, the reader must have an adequate account of how the author got to the conclusion. You should state the author's purpose and, in general, his method of coming to his conclusions. What evidence does he present and how was it obtained? Or, what are the main points and directions of his thinking or argument? You will quickly see that some types of documents lend themselves easily to the informative abstracting we prefer, while others do not. Research reports, for example, often can be abstracted in this way because convention requires careful organization and author summaries of findings. Simple studies may be abstracted in one succinct paragraph. More complex studies may be clearer and easier for the reader to grasp if they follow the convention of labelling sections: purpose; method; findings.

> Dow, June B.
> Characteristics of non-credit university extension students.
> Los Angeles, University of California, 1965. 181p.
>
> PURPOSE: To discover some characteristics of adult students enrolled for non-credit daytime courses (providing opportunities of adults to pursue intellectual, civic, and cultural interests) at the University of California Extension Center; to study the typology of the persistent learner as identified by Houle in The Inquiring Mind; to determine reasons for which people discontinued studies.
> METHOD: Personal interviews of 5 men and 19 women chosen for persistence of educational activity. Detailed questionnaire completed by day-students. Ten dropouts were interviewed.
> MAJOR FINDINGS: Age of participants: 20-29 (2), 30-39 (7), 40-49 (6), 50-59 (4), 60-69 (5).Most from upper middle class; all were Caucasian, well educated, urban residents of the San Francisco Bay area. They were not typical joiners; interaction with friends accounted for little of their leisure time activity; they were influenced little by their peer's opinions or criticisms; most watched TV rarely and appreciated and enjoyed nature. Their choice of courses depended largely upon content and hours offered. Many stressed the importance of the quality of teaching. There were no goal-oriented students in this group, a small minority were learning-oriented, the remainder did not fit Houle's category of activity-oriented; most considered the learning experience a maturation process with broadly differentiated, intrapersonal significance. Reasons for dropping out: family or job-related responsibilities, moving away from the area, change in working hours, financial reasons, and attending another educational institution.

Informative abstracts are especially useful for documents which contain what we have come to call "hard data," that is, specific factual information which we envisage users of our retrieval system searching for. These data need not be statistical, but should be factual, concrete, and potentially useful.

> Canada. Dominion Bureau of Statistics. Education Division. Organized in-service training in four major industries. Dept. of Labour and Dominion Bureau of Statistics, 1963. 43p.
>
> PURPOSE: To determine the extent of organized on-the-job training in Canadian industry.
> METHOD: Questionnaires to 4 major industrial groups: manufacturing, mining, transportation and communication, and public utilities, totaling 13,783 establishments having 15 or more employees. Companies with less than 50 employees were first screened to determine if they had organized training programs. Survey deals with programs for 3 categories of skills: skilled tradesmen, firstline supervisors, and technicians. More than 86 percent usable responses were received.
> FINDINGS: The size of the establishment has a very definite bearing on whether or not a training program is undertaken. Of the 4 major industry groups, public utilities reported the highest ratio of training programs. Much the highest percentage of establishments with training programs at the skilled tradesman and supervisor level were recorded in public utilities, while the transportation and communication group reported the highest percentage with technician training programs. Marked differences were shown among the specific industries, with gas manufacturing and distributing companies and telephone companies the most active, followed by electric light and power companies, the railroad industry, and the air transport industry. Water transportation industry was conspiciously low within the transportation and communication group. 15 tables report detailed findings.

Since informative abstracts are unquestionably more useful, we should prepare informative abstracts where the author's principle findings or main thoughts can be briefly and accurately summarized.

Many documents, however, simply cannot be briefly and accurately summarized. We have found it almost impossible, for example, to abstract discursive essays of any length and complexity of thought, without considerable distortion of misleading over-simplification.

For these, it is usually better to be precisely descriptive: what is being discussed? for what purpose? from what viewpoint and for what audience? what are the main elements or sections of the presentation?

> Morris, Sir Charles. The idea of adult education. Leeds, Leeds University Press, 1963. 15p.
>
> The first Mansbridge Memorial Lecture contains a brief account of Mansbridge's philosophy of education, particularly worker education (education as an end in itself, course content being social history, political economy, and English literature) and present and past philosophies of the Workers' Education Association which he founded in England.

Overviews which cover extensive subject areas, discussing many things, but giving little detail on each usually require descriptive abstracts.

> Ofeish, Gabriel D. Programmed instruction; guide for management. New York, American Management Association, 1965. 416p.
>
> Review of programmed instruction applied to industrial training. In addition to chapters on the need for instructional technology, programmed instruction and industrial training, how to design a system, how to develop a programmed instruction training system, how to acquire programs, special problems and uses, etc., it includes 35 brief case studies of programmed instruction in industries, such as American Bankers Ass'n, American Telephone and Telegraph, General Electric Company, Montgomery Ward, Sperry Polaris, Union Carbide Chemicals Company, etc. In most cases, includes a summary evaluation of the program. Refs.

We have found it impossible to make adequate informative abstracts for some of the most important and information packed documents in our collection. These volumes simply contain too much, too detailed and too important information to submit to brief summaries. They are compilations so basic in the field, that we will almost automatically consult them on every question in the areas they cover. Therefore, give them descriptive abstracts.

United Nations Educational, Scientific and Cultural Organization.
Economic and social aspects of educational planning.
Paris, UNESCO, 1964. 264p.

Educational planning in relation to manpower development and needs from the following points of view: finance, social factors, demography, educational output, human resources, overall development planning, types of quantitative data needed for best educational planning, and project analysis and planning for international financing. Chapters on educational assessments offer statistics for 45 countries on the estimated need for general education, age limits of compulsory education and percentage of population attending school, teacher-pupil ratios, per capita income and costs of education, and percentage matriculating with respect to school age population. Analysis of the economics of education in the USSR 1914-1960: statistical...

Descriptive abstracts may be very brief annotations. In the following example, three sentences indicate the content of a 134-page book precisely and adequately.

Lyon, Mary, ed.
Crafts for retirement; a guide for teachers and students. New York, American Craftsmen's Council, 1964. 34p.

A handbook on teaching the crafts of hooking rugs; weaving; needlework; block, silk-screen, and hand-press printing; jewelry and metalwork; enameling; pottery; and woodworking to the aged. Includes brief discussions on problems of the aged, special teaching techniques required. Sources for equipment and supplies listed, also some references.

See the later section on the problems of special types of materials for further guidance on informative or descriptive abstracting.

Remember the basic rule: Informative abstracts should be prepared whenever the intellectual content can be briefly and accurately summarized.

GENERAL GUIDELINES FOR DOCUMENT ENCOUNTER

Length, Abstracts should be held to 200-250 words as a general rule. If fewer words can be used, so much the better. The obvious basic rule is: make the most compact, economical abstract which is precise, clear and adequate to the document. If more than 250 words are needed to accomplish this end, use them. The word limits are guidelines, not arbitrary restrictions.

Why do we try to keep the abstracts relatively brief? First, most of our documents can, in fact, be quite adequately represented for our purposes within the suggested limits. Added words may mean that the abstractor is straying to the addition of details of methods or findings instead of seeking out the most salient and vital elements of the document. Or, the abstractor is grossly lax in the constant discipline required to prune meaningless words and to condense thought with economy and precision.

Second, long abstracts are formidable to the reader. Abstracts are primarily used for scanning, so brevity and clarity are essential.

Third, if the document seems to require many more than 250 words to portray its main content, it is probably so complex and dense with information that we should not try to give it an informative summary, but should rather make a good descriptive abstract.

Information units. One help in the problem of length, is the possibility of handling chapters, journal articles or any reasonably independent part of a physical document as a separate information unit. Our system is designed to handle units of information of any length and in any form. The choice of the information unit to be abstracted and indexed is always based on the intellectual content, never on the physical form of the document.

The subject specialists who assign material for abstracting will often suggest breaking the book or long report down into separate units for analysis, but the abstractor should also be alert to this possibility. If you find too many words required in the abstract, ask yourself if the report should be handled in smaller units. These need not be chapters or necessarily coincide with any natural divisions the author has used. You may find within a long report a few pages with important information content which stand quite logically as an independent unit. For convenience we have dubbed these information units "documents", whether they be books, long reports, dissertations, chapters, articles, or even a few pages in a longer report. Our literature comes in many forms and serves many purposes. You may find "document" a rather amusing misnomer for many of the information units we analyze; use of that term is simply a convenient convention of LCE.

What to include. Your basic directive as an abstractor is to condense the author's presentation as accurately as possible. All concepts or subjects or aspects to which he devotes his attention and on which he gives significant thinking or information must be negotiated into the abstract.

You will often find the document encounter exactly that - an exasperating, taxing struggle to reduce the document thought to order. This is especially the case when the document itself is diffuse or poorly organized, as, unhappily, many are. You will feel a temptation simply to omit some parts of the presentation in order to make the abstract clear and orderly. Do not give in. ALL ELEMENTS OF THE AUTHOR'S PRESENTATION MUST BE REPRESENTED IN THE ABSTRACT. THE ABSTRACT MUST BE COMPLETE.

Nonetheless, you have the right and duty as an abstractor to clarify, order and, especially, to condense the author's presentation. When you have seized his main purpose or viewpoint or area of interest, you may be able to invent a series of simple questions to help you grasp and order the elements of the presentation. For example: WHO was involved in this work? WHAT was done or discussed? WHY is it important? what METHODS OR PROCEDURES were involved? what CONCLUSIONS were drawn? to WHOM is this of interest or importance? Always try to size up the author's intent or purpose, where he began in his thinking. Find his conclusions, where he ends. Ask yourself, "How, by what process of investigation, reasoning, argumentation, did he get from his problem or purpose to his findings or conclusions?" Be sure these points are made clear in the abstract.

Look at the outline of our classification system, for it lists the major aspects of adult education in which we are always interested. It almost suggests a routine set of leading questions: Who was being educated? In what setting? By what method? Who were the educators? What agencies sponsored or facilitated the work? What subject was studied for what purpose? How was it evaluated?

Look at our thesaurus of indexing vocabulary and its classified arrangement. Here are the particular concepts of adult education. Grow familiar with them. These are the terms in common use in the field, with their synonyms and relationships laid out before you.

Finally, be willing to summarize with great economy those parts of the author's presentation which are largely repetition of information, attitudes or viewpoints which are already common knowledge to our key audience of professionals. Our literature is wastefully redundant.

Passages of inspiration and exhortation can also be summarily dealt with. This professional group understands the importance of adult education and its social significance and they are already working as hard and responsibly as they can.

Be alert to practical knowledge that can be applied to improve practice in the field or to make decision making more effective. Look for tested knowledge, new thinking, insights and experience, or for cogent challenges to accept dogmas. Basic rule: reproduce the author's presentation with precision and accuracy.

Pattern of emphasis. Preserve the perspective and balance of the document in the abstract. Preview the document, using the table of contents, summary sections, index, or any other device to grasp the central organizing principle and the relation of the parts to the whole. Check or underline passages, if you find this helpful.

Do not allow the heat of the document encounter to distract your attention from the main structure, central purpose and major elements of the presentation. Above all, do not get so absorbed in digesting the findings, etc., that you lose the main point of the document entirely.

Review your abstract to be sure it preserves the balance and perspective you detected in your preview of the document.

Language. Use the author's language and terms in so far as possible. Try to preserve or convey his "tone of voice," which may be an important clue to how the author has handled his subject.

Use the author's terms, if they are commonly understood in the field. If his use of common terms diverges somehow from the usual meanings, try to clarify this in a brief phrase of parenthetical explanation. If his use of common terms is grossly misleading, use the standard terms with the author's term in parentheses or otherwise explained.

If the author proposes new terms which seem plausible, succinct and potentially useful in a field where technical vocabulary is poorly developed, use the term and give a brief definition or explanation. Do not pick up idiosyncratic, cute, derogatory, or misleading terms and usages from the author.

You have the duty to clarify as well as condense the author's expressions so that his thoughts are easily intelligible to the body of professional persons in the field. Use our thesaurus as a guide to accepted terms. Use the technical vocabulary of adult education, such as it is, as a tool in your effort to condense. Pack your abstract with these terms which are widely understood and extremely useful in indexing the document.

Check your abstract to see that all important concepts are represented by appropriate and accurate terms and that the condensing and clarifying you have done do not seriously misrepresent the nature and intellectual tone of the document.

Summary initial sentences. Try to make the first sentence of each abstract a compact summary of the entire document. This again is a service to the reader. He may detect from this first overview whether or not he is interested in reading the entire abstract.

Objectivity and evaluation. The documents to be abstracted have been designated by subject specialists. Since they can only scan t the reports, you as abstractor have the responsibility of confirming their selection. Is the document really important enough to merit the special attention of abstracting and depth indexing? If you doubt it, bring this problem to the attention of the abstract editor with an explanation of your judgment.

Check each document, whether a research report or any other form, to see that the findings, conclusions or assertations of the author are backed up by presentation of evidence, information or orderly thinking. If you detect gross fallacies or inadequacies, call these to the attention of the abstract editor, again with an explanation of the problem.

Make these judgments, if possible, before you do the full work of abstracting, for we do not want to spend time on material not worth the effort.

Never make evaluative statements in the abstract which are not those of the author himself. You may, however, use terms such as "brief," "intended for the teacher," etc., which are essentially descriptive of the document rather than evaluation.

Never allow your own special interests in parts of the document or your own preconceptions or opinions about the subject to distract you from precise and accurate reflection of the author's presentation.

MEMO: T-RM-73 TO: Diana, Roger, Dean Montgomery, Dr. Pardee, Policy Committee, SURC Personnel

FROM: Ron Miller

Jan. 27, 1966

SUBJECT: SURC AND OUR MACHINE PROBLEMS

On January 14 and 15, 1966 I had conferences at the Syracuse University Research Corporation offices to explore a possible role for SURC in our project on a contractual basis.

LCE Mechanization Objectives

These discussions arose from a series of frustrations encountered along a path laid out several months ago to attain our technological objectives using university-operated computers and related equipment. These objectives remain the same, and are briefly summarized as follows (see also T-RM-54 dated July 20, 1965):

1. To encode data derived from selected documents in adult education into machine usable form (presently paper tape is used in this process).
2. From these data we want to:
   - (a) Format and print catalog cards by computer as well as non-computer means, for comparison of the economics, time and output from each method;
   - (b) Format and print pages of an experimental abstract journal (Continuing Education Abstracts) for photo-offset reproduction, by computer as well as non-computer means for the same reasons as 2.a.;
   - (c) Test the feasibility and efficiency of automatic document retrieval, using:
     1. a controlled indexing vocabulary;
     2. matching of uncontrolled request terminology with words used in abstracts;
   - (d) Format and print up-dated word-lists derived from abstracts both for our use in indexing, and for members of a user test group to formulate questions to be posed to the system;

(e) We also want to match information characteristics of groups of individuals with similar interests to characteristics of documents stored in a computer and produce "tailored current awareness" listings to be sent to test users for coverage and frequency measurements. This technique is a similar but simplified version of IBM's Selective Dissemination of Information (SDI);

(f) We hope, too, to use these capabilities to aid us in deriving suitable classification schemes for shelving and/or organizing documents in catalogs and bibliographies.

Our present route, designed almost a year ago is as follows:

OUR PRESENT ROUTE

1. Paper tape produced at LCE on Flexowriter, from which catalog cards, Continuing Education Abstracts, and a paper tape containing derived data from selected documents for entry into the 7074 computer is produced.

2. Since neither the IBM 7074, or 1460 will accept paper tape as its input, it is sent to SURC for transfer to disc on the IBM 1620. (Program written)

3. The disc is transported to the Computing Center for data transfer to mag tape on their 1460 Computer. (Program written)

4. The mag tape data is re-formatted and labelled for input into the 7074, for PEST manipulation on another mag tape. (Program not written)

These steps are far too numerous, unnecessarily raising the opportunities for error, as well as incurring transportation feedback and processing delays. The programing required to "translate" our paper tape into codes formatted for PEST appear to be excessive and unnecessary in view of new events, events which were unknown at the time our original route was plotted. In addition to which the talent mentioned above has for various reasons been operationally unavailable to us.

Shortly, the IBM 1620 computer will be replaced by an SDS 930 machine at SURC. This change appears to be beneficial to us in several ways:

SDS 930 COMPUTER

1. It is a very fast processing machine; its I/O units are apparently more efficient, less expensive, than either the 1620 or the 7074. Less processing time means a considerable saving

in operating and processing costs, since the base hourly rate is also cheaper than the 7074.

2. It negates the necessity for using disc as an intermediary step (at least separately) as designated in our original input route.

3. It is completely compatible with PEST-Produced tapes.

4. It will have a paper tape reader at no cost to either the project or the library. The University Library presently rents a PT reader which SURC also uses for its own purposes, since we are not charged for 1620 time.

5. The machine will be housed in a university unit with professional talent available to program and operate it to our specifications. Further, it will probably be here longer than the 7074, which is being considered for replacement. PEST would then not be usable on any SU Campus machine without re-programing.

The facts that this new machine is scheduled shortly to arrive close by to the LCE, and that programing and operating talent is available and eager to give us satisfactory service, that PEST may become unusable in the forseeable future, (a new system is expected to replace the 7074), that the 930 is faster and cheaper than other local machines of comparable capacities, lead us to entertain three operational routes as discussed at SURC:

ROUTE 1:

a. Produce paper tape as we do at present.

b. Paper tape to SURC for direct translation to mag tape, ready for input into the IBM 7074.

c. Run our IR studies as originally planned from that point on, hiring programers as needed to write and debug stripping, catalog card and abstract production, and statistical analyses programs for use on the 7074.

errorerror

This procedure condenses our three present translation steps into two, significantly reducing potentials for error. But, since three processing locations are required and the concomitant proliferation of people involved, coordination of timing, individual responsibilities, and communication appear to be quite difficult.

ROUTE 2:

a. Produce paper as we do at present.

b. Paper tape to SURC for direct translation to mag tape, ready for input into the IBM 7074 at the Computing Center.

c. Transfer the PEST-produced TEXT TAPE, and VOCABULARY TAPE programs from the Computing Center back to SURC, where special programs written for the SDS 930 will allow us to perform PEST IR as well as the other tests described above in ROUTE 1.

This procedure not only condenses our present three translation steps into one, but concentrates machine manipulation and programming in one professional agency, utilizing at the same time existing input, formatting, and vocabulary programs included in the PEST IR package. Only 7074 machine operators would be required from the Computing Center, and transportation of tapes supplied by us.

Costs would include the original conversion work done in Route 1, as well as supplemental programs to perform IR as well as the requirements outlined in 2.C.-F above.

ROUTE 3:

a. Produce paper tape as we do at present.

b. Paper tape to SURC for direct input into the SDS 930, with random-access disc storage of text material. Programs to be written for the 930 exclusively, not using the Computer Center facilities or personnel.

This procedure requires those parts of the PEST IR logic to be reprogramed for the 930 which we require, incorporating at the same time logical alternatives which have been developed since PEST was originally written, such as IBM's PRIME system now operational at the Thomas J. Watson Research Center at Yorktown Heights.

Since we have not planned to decentralize our programs to other institutions (as yet), we needn't be too concerned with the relative scarcity of 930 machines; PEST, regardless of our decision is still freely available to 7074 users. The 930 version would inevitably become an up-dated and "customized" version of one written originally for the IBM 650 at the University of Pittsburgh. We should, I think, consider ourselves as part of a "chain of refinement" for divising an ideal system for IR in education in general, not only adult education.

In any event, we have no choice but to change from our present route, unless we want to use another 1620 machine either at Carrier or the Upstate Medical Center. Since use of these machines involves less control than we now have, I strongly oppose using either one.

COMMENTS As far as SURC is concerned, they have my complete confidence; they are willing to experiment with new methods such as (for instance) on-line input and output to LCE, with or without cathrode ray tube displays and have had experience in problems similar to our own. We have three publications describing this work.

DECISION FODDER Subject to suggestions and modifications offered by Dean Montgomery, Dr. Pardee and SURC people, my present view is strongly in favor of Route 3 for the following reasons:

1. ALL conversion, processing and programing would be done by one team of knowledgeable professionals, in one physical location.
2. PEST capabilities would form the logical basis for writing programs tailored precisely to our requirements, modified by such advanced techniques as IBM PRIME system and Selective Dissemination of Information (SDI).
3. Our requirements would conform to some experimental work which SURC wants to do with some specialized units (cathrode ray tube, remote consoles, and the like).
4. SDS 930 machine time and costs are considerably lower than 7074 time.
5. We are able to phase into SDS use, without interrupting present operations, via Route 2.

MAJOR DISADVANTAGES

1. Cost. How do we fund this work during the next year?
2. Time. Starting from scratch, but a good deal better equipped to know what we want and better able to see how to get it than we were 9 months ago.

Such are my present feelings. The alternative paths described in my memo (P-RM-17) are also being examined. The above comments have been merely a clarification of our thinking. Much more remains to be done; it must be done soon and with clarity.

APPENDIX 37

REQUIREMENTS OF LCE OUTPUT

MEMORANDUM: T-RM-54 TO: STAFF AND FILES FROM: RON MILLER JULY 20, 1965

GENERAL: The LCE project on information processing and retrieval (refer to standard worksheet for field identification).

I. Output to the subfields of continuing education

A. CONTINUING EDUCATION ABSTRACT BULLETIN (Experimental)

With supplements for special interest groups as needed. Limited distribution. Approximately 200 copies.

We have tentatively specified the arrangement as follows:

COVER

INTRODUCTION

SECTION I

Full citations arranged by document number (field 2).

Indexing terms (fields 29 and 30) listed after the abstract, and preceeded with the phrase SEE ALSO.

The printed out field sequence should be as follows:

2,1.3,(4*,5*), 6,7*,8*,9*,10*,11,12,13*, 14*,15, 16*,
17,18*,19*,20,21*,22,23*,24*,25*,26*,31,27,28*,29,30.

[N.B. Underlined fields indicate output sequence changes. * indicates a field not always containing data.]

SECTION II

Subject index to the citations in Section I, using primary terms from field 29, arranged in a list and condensed as follows:

Primary term	Document #	Page
Adult Education	114	19
	175	23
(etc)		

SECTION III

Author index to the citations in Section I:

Author	Document #	Page
Anderson, George E.	74	14
	76	14

B. CATALOG CARDS:

Formated and produced as presently done on Flexowriter, but automatic rotation and printing of subject headings (field 27) followd by added entries (field 28). If we remain with Flex input and can accommodate the above requirement, we may remain with it, but we want to run a cost estimate of computer-produced cards from the full citation information.

C. BOOK CATALOG:

A listing of all acquisitions arranged by author, with subject indexes arranged in dictionary form.

D. IR TO USER GROUPS:

Using Bacon-PEST searching to match query terms to terms in both abstracts and terms assigned to abstracts; i.e. searching fields 29, 30, 31.

II. Output to LCE for analysis (Bacon-PEST and other programs)

A. Lists of words and/or terms with the number of times each word occurs, its location, address within a document (or set of documents), arranged:

(1) Alphabetically:

	Words and/or terms	Number of occurences	Document #'s
e.g.	adult	200	24, 35, 46, etc.
	zoology	40	1, 7, 9, etc.

(2) Ranked by frequency:

	Number of occurences	Word/term	Document #'s
e.g.	4000	education	2,2,2,3,7,7,9, etc.

B. The procedure in A (above) should apply to:

1. Index terms (fields 29 and 30)
2. Abstracts (field 31)
3. Whole text (field 31 extended)

C. Strip one field from all documents on the text tape, and arrange the stripped field either alphabetically or numerically.

D. Strip several fields from all documents, and arrange the fields as groups alphabetically as well as numerically by one, or alternatively, several fields.

For instance:

(1) Strip field 4 (or 5) and field 6 from all documents, then arrange 4 (or 5) and 6 as a unit alphabetically by field 4 or 5, then print a list by field 4 or 5.

[N.B. sometimes a document will have information in field 4 and not 5, or conversely, 5 but not 4. Either condition will always obtain.]

(2) Strip fields 2 and 27, sort and list by 27 (1 - 4)
2 and 20, sort and list by 20
4 and 2, sort and list by 4 and 2

E. Tie any field to its computer-generated location in the text tape. (We may use PEST types 1 - 9 for this purpose).

THE LIBRARY OF CONTINUING EDUCATION
at SYRACUSE UNIVERSITY

ADULT EDUCATION INFORMATION SYSTEM

INPUT DESCRIPTION

Draft, February, 1966

ROGER DeCROW | DIRECTOR

DIANA J. IRONSIDE | ASSOCIATE DIRECTOR

BETTY JANE VAUGHN | LIBRARIAN

107 RONEY LANE | SYRACUSE, NEW YORK 13210 | 315 476-5571 EXT. 3493

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A.II. Sample page, Continuing Education Abstracts.

A.III. Sample catalog card set

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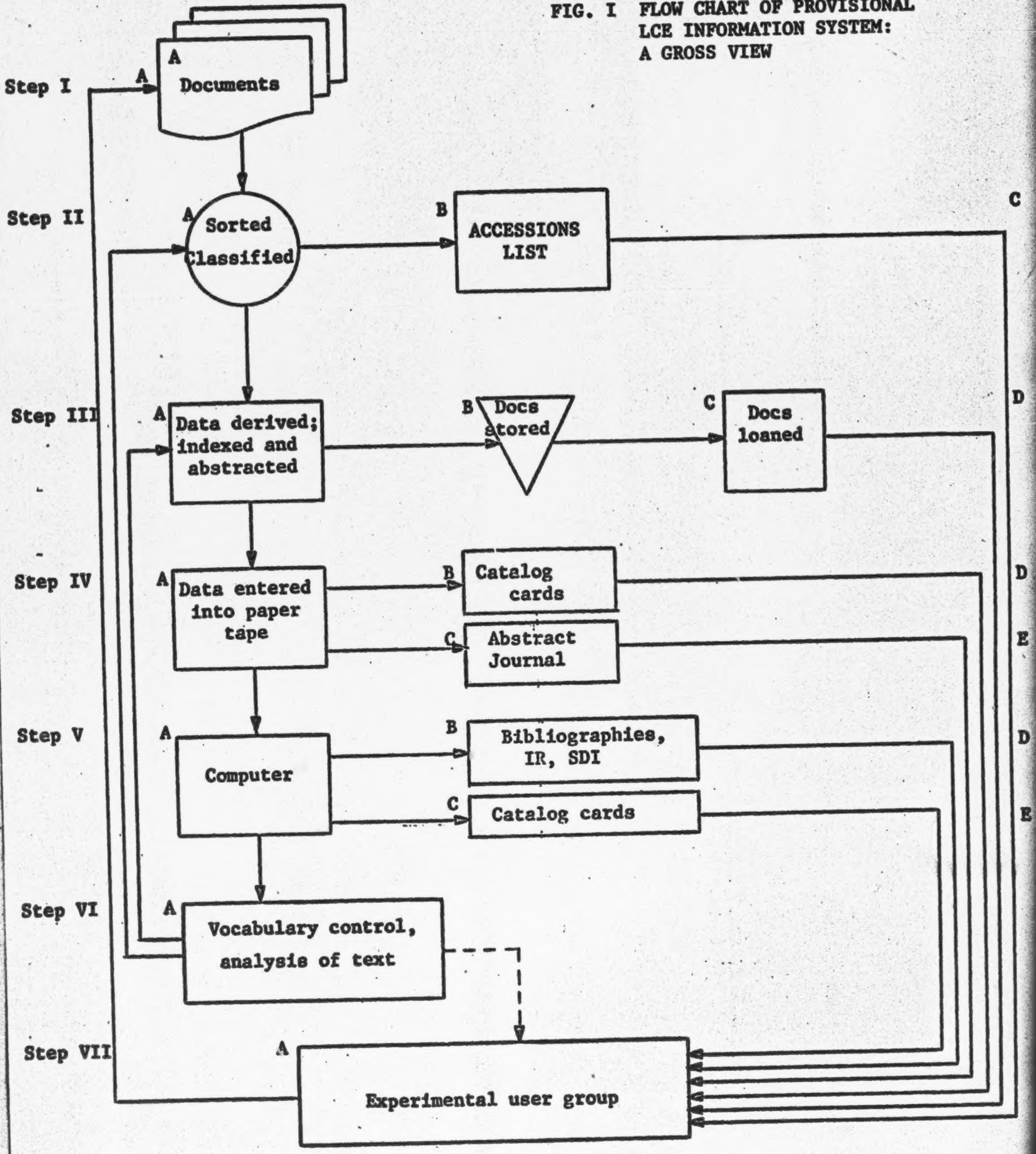
B.V. INPUT AND CORRECTION PROCEDURE

B.VI. DERIVED DATA: FIELD UTILIZATION IN OUTPUT

FIG. I FLOW CHART OF PROVISIONAL LCE INFORMATION SYSTEM: A GROSS VIEW


Step I
A
A
Documents
Step II
A
Sorted
Classified
B
ACCESSIONS LIST
C
Step III
A
Data derived; indexed and abstracted
B
Docs stored
C
Docs loaned
D
Step IV
A
Data entered into paper tape
B
Catalog cards
D
C
Abstract Journal
E
Step V
A
Computer
B
Bibliographies, IR, SDI
D
C
Catalog cards
E
Step VI
A
Vocabulary control, analysis of text
Step VII
A
Experimental user group

LCE INPUT DESCRIPTION

INTRODUCTION

The Library of Continuing Education (LCE) at Syracuse University is a comprehensive national collection of adult education literature maintained by the University for the benefit of the Adult Education profession.

The LCE staff is engaged in a three-year experimental program to design elements of a model information system to serve the adult education field. Experiments are underway to:

1. develop centralized production of catalog cards.
2. design and test the usefulness of an abstract journal.
3. design and test a computer-aided information retrieval and dissemination system.

This experimental work is being done in part under a contract with the U.S. Office of Education under the provisions of the Cooperative Research Program.

All of the objectives mentioned above require data to be derived, or isolated, from original documents regardless of the forms these documents happen to take. Derived data include index terms and abstracts, as well as the usual bibliographic descriptions familiar to most users of library card catalogs. These data may be derived not only from the usual printed texts, but microforms and audio-visual materials as well. Since it has been demonstrated many times over that the storage of whole text in computer memory, as well as manipulating and searching a sizable collection of these texts, is exceedingly expensive and time-consuming, derived data seems to be the most workable method of getting at documents once they have been incorporated into this or almost any other information system using prose as its data base.

The information taken from the documents can then be highly organized and encoded into machine-readable form for several purposes, the documents themselves remaining in original text files or reduced in size into one of several microforms available and handled in semi-automated fashion. And although the optimum organization of the origiral text file for rapid access is highly important in any information system, our present phase is primarily concerned with developing and testing the most efficient use of derived data.

Since diagrams are intended to help a reader grasp elements of a complex system in a manageable structure, we use them as much as possible in our description. WARNING: because a particular process is diagramed, do not assume that process to be in its final form. All of what the project does is subject to quick revision as decisions are made resulting from cumulative experience. It is this reflex or feedback action which is characteristic of the experimental nature of our work.

EQUIPMENT

Present equipment available to the project includes:

Friden Flexowriter Programatic Automatic Writing machine, model SPD; with 8-channel paper tape, - edge-punched card reader, 8-channel paper tape, - edge-punched card punch.

Auxiliary tape punch (ATP), with odd-bit parity.

Auxiliary Selectadata tape reader, with manual data selector (STR-AD).

Model 103 Termatrex optical coincidence coordinate search system.

and access to:

IBM 026/029 keypunches.

IBM 082 sorter.

IBM 407 tabulating machine.

IBM 1401 computer.

IBM 1460 computer.

IBM 7074 computer, mag tape and card I/O.

SDS 930 computer, with CRT, disc and mag tape I/O, PT and card input, UC printer.

We do not use all of this equipment; it is listed merely to illustrate our machine potential.

INPUT SYSTEM DESCRIPTION - GROSS VIEW

What follows is a description of our present experimental input phase which will provide us with the flexibility to modify our output and analytical tools at any subsequent stage. Refer to flow chart of gross operations (FIG. I).

Translated into English, FIG. I illustrates our projected document and analysis flow as follows:

FIG. I. Steps I.a, II.A,B,C. Documents are received, sorted and classified, then listed on our bi-weekly Accessions List which is distributed to professionals in adult education and to libraries throughout the world(see Appendix A. I). This sequence is an on-going operational service of the Library. Prescribed data are derived from the documents and entered in standard DOCUMENT WORKSHEETS (see Appendix B. I). These data include bibliographic descriptions, indexing terms, and abstracts.

FIG. I, Steps III.A,B,C. The documents are then stored, ready for use or photocopying, and the DOCUMENT WORKSHEETS continue, after checking, to the machine room.

FIG. I, Steps IV.A,B,C,D,E. The data from the DOCUMENT WORKSHEETS are transcribed into paper tape on a Friden Flexowriter, and using the Flexowriter as an output unit, we produce:

1. Experimental abstract journal pages (Continuing Education Abstracts).
2. Catalog cards.
3. Paper tape input to computer.

FIG. I, Steps V.A,B,C,D, VI.A. We are testing and debugging subsystems to produce several kinds of computer output, much of which will help us develop classification tools, data for textual analysis, and indexing vocabulary lists (Thesauri). In addition, we presently intend to test computer-production of catalog cards and an abstract journal as well as demand bibliographies and book catalogs. These computer activities will help us to continually modify many of the preceding stages, and may intentionally duplicate less sophisticated methods already operating for comparison purposes.

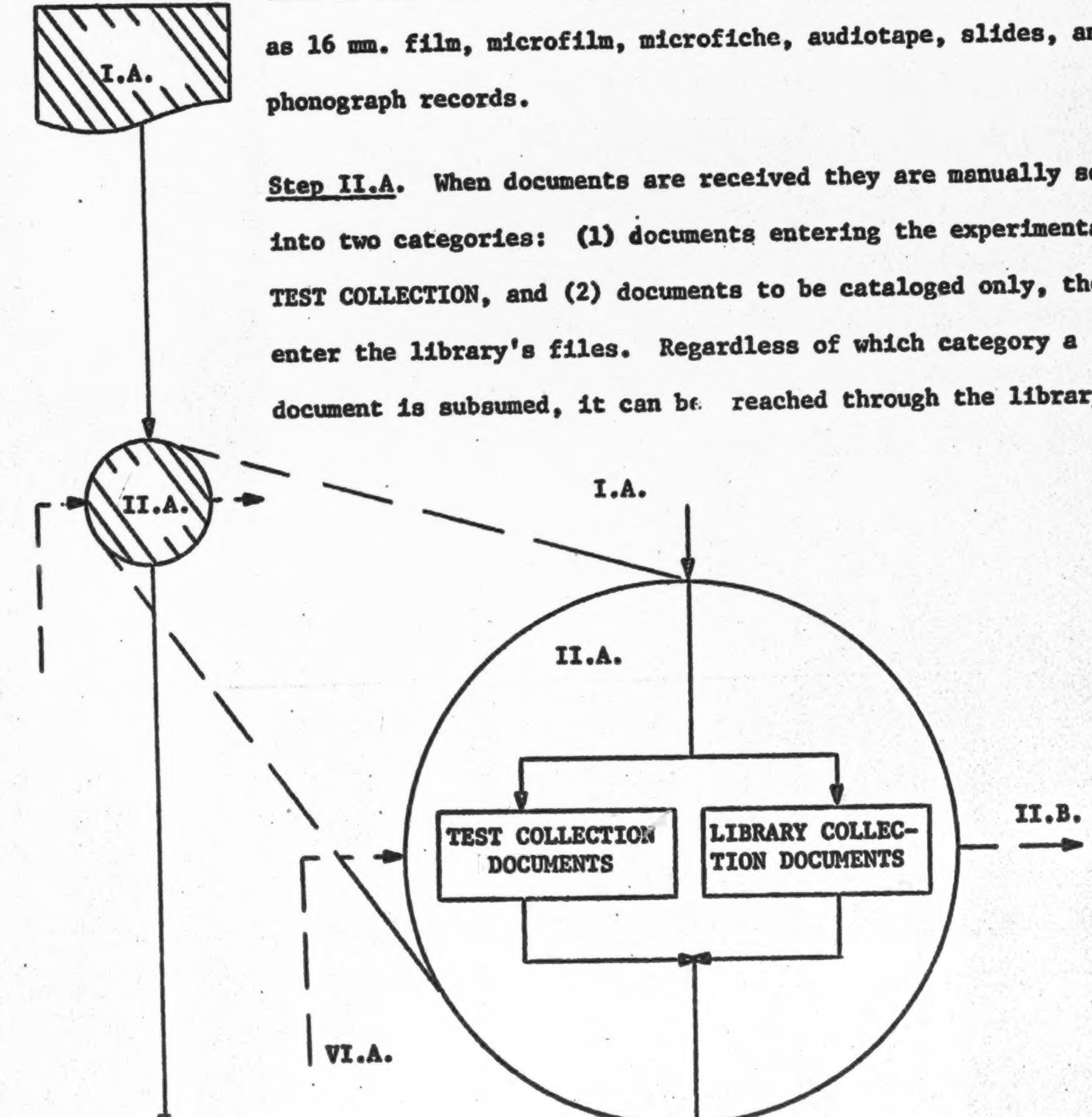
All of these activities are for the purpose of designing an operational system to serve users. Therefore, during this period we are using the talents of selected users to help test and design major parts of the operation. Since these people form a group of potential users of the system, design parameters are determined largely by user information requirements. From the project's inception, our philosophy has been to "design from need" rather than by supposition and imposition of our own ideas. This point of view means that we are trying to make the information requirements of users mesh as much as possible with the information hidden away in masses of documents. Our system, then, is, as far as possible, an attempt to integrate these factors, test them, and provide sufficient flexibility to revise parts of the system by a process of successive approximations to reach an ideal.

What follows is a detailed explanation of our document flow, up to the point where derived data in paper tape form enters the computer phase. The steps presented in FIG. I are used as system reference points. Please note that only about 1% of the documents received are earmarked for entry into the experimental TEST COLLECTION. The documents deal with adult learning, and form a range of information with which we propose to refine the LCE system. Hopefully, if our procedures work effectively on this document core, it will be systematically broadened into the areas of adult education.

(Ref. to FIG.I)

Step I.A. Documents may be of several types and in various forms, such as the usual books, journals, reports, dissertations, as well as 16 mm. film, microfilm, microfiche, audiotape, slides, and phonograph records.

Step II.A. When documents are received they are manually sorted into two categories: (1) documents entering the experimental TEST COLLECTION, and (2) documents to be cataloged only, then enter the library's files. Regardless of which category a document is subsumed, it can be reached through the library's

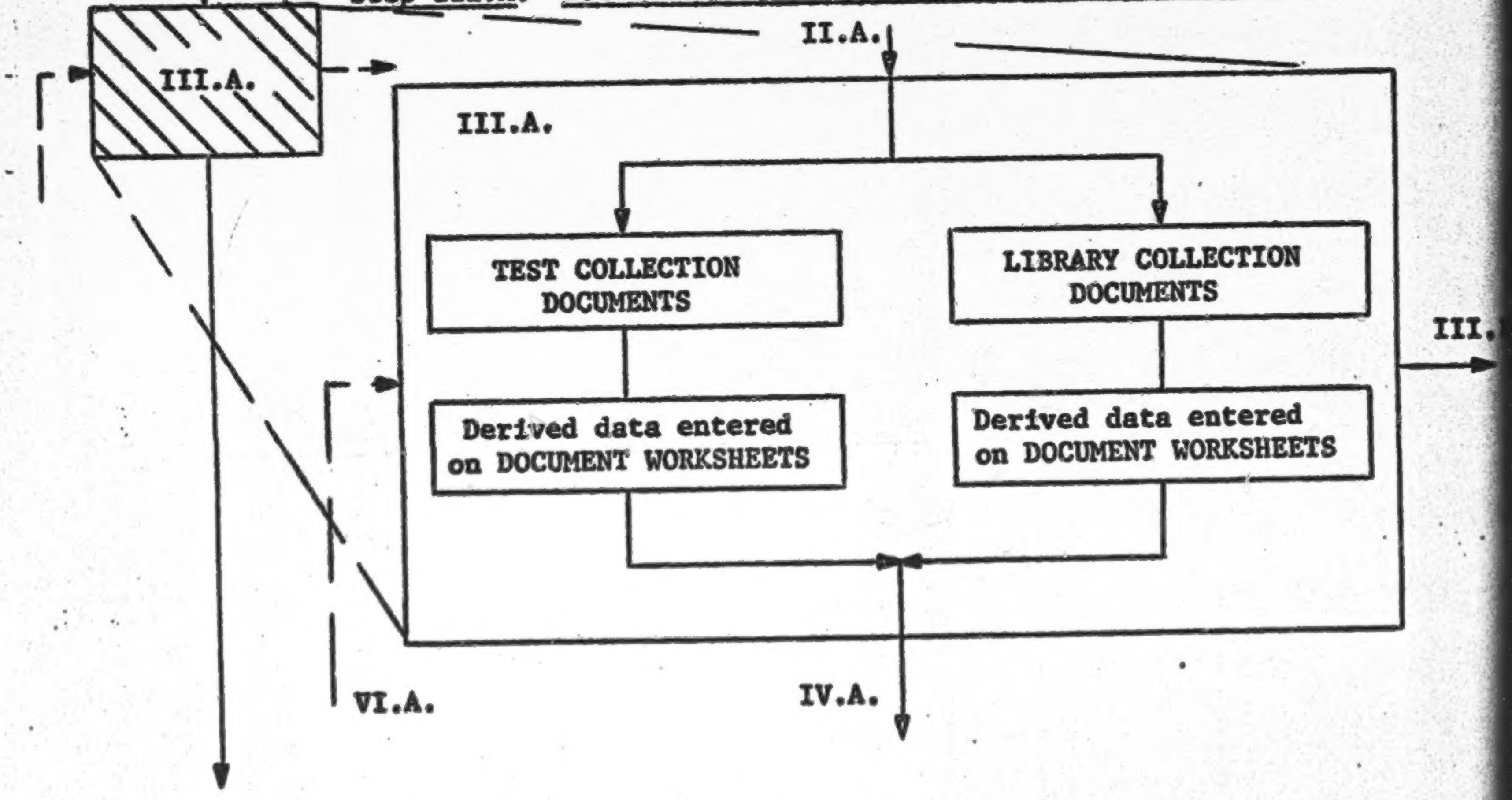

I.A.
II.A.
I.A.
II.A.
TEST COLLECTION DOCUMENTS
LIBRARY COLLECTION DOCUMENTS
II.B.
VI.A.
III.A.

traditional card catalog under author, title, or subject. At this stage documents are provisionally classified for shelving purposes.

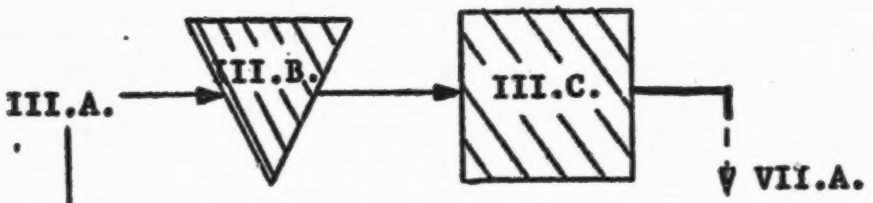
Step II.B. Accessions List (see Appendix A. I.).

The Accessions List is a bi-weekly "quick and dirty" listing of materials selected for inclusion in the LCE collections. No mechanization has been applied to this service other than the usual typewriter and spirit duplicator, and takes about 10 hours to produce and distribute. It is sent to anyone requesting it, but the mailing list is purged once annually.

Step III.A. Document data derivation; indexing and abstracting.

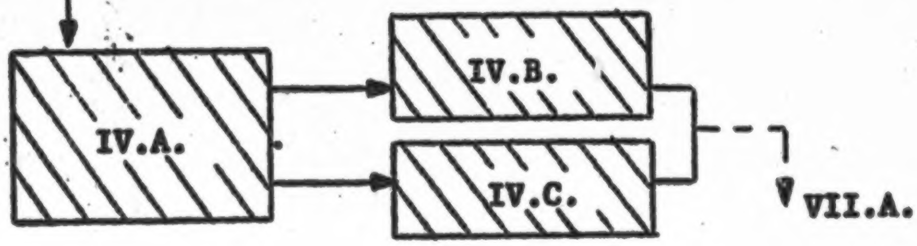

II.A.
III.A.
III.A.
TEST COLLECTION DOCUMENTS
LIBRARY COLLECTION DOCUMENTS
Derived data entered on DOCUMENT WORKSHEETS
Derived data entered on DOCUMENT WORKSHEETS
III.
VI.A.
IV.A.

Descriptive data from TEST COLLECTION and LIBRARY COLLECTION documents are derived and entered into a fixed format DOCUMENT WORKSHEET (Appendix B.I.), which contains thirty "fields." The data derived from LIBRARY COLLECTION documents is used at present solely to produce catalog cards on the Flexowriter. The data derived from the TEST COLLECTION documents include standard bibliographic description as well as two kinds of index terms, and either informative or descriptive abstracts.



Steps III.B. and III.C. Once the documents have been analyzed and the data derived and entered on worksheets, the documents themselves are shelved, ready for circulation or photocopying.

Steps IV.A,B,C. The DOCUMENT WORKSHEETS of TEST COLLECTION and LIBRARY COLLECTION documents are proofed and keyed into paper tape. A proof of what is punched is produced simultaneously by the Flexowriter on a machine INPUT FORM (Appendix B.I.).



INPUT FORM I
PINK DOC. DATA TAPE PROD. IN NO. I PUNCH.

23:A1/11(4.212

IV. A

Kreitlow, Burton W.
A comparison of the effectiveness of the
lecture, bulletin, film and television in
presenting re s. Edwards,
William P., j Adult education,
v. 11, no. 4) AEA of the USA,
1961. pp. 212 M.S. thesis
abstract, University of Wisconsin) C RE
ADULT LEARNING--METHODS AND TECHNIQUES
TEACHING
Edwards, William P., jt. auth.

PROOF I - FIELDS AND FORMAT
1 23:/
2 A1/11(4.212/
3 /

Once the data has been punched into paper tape it passes unchanged except for formatting through the remainder of the system. Therefore, a very tight checking procedure has been built into the document flow, the most critical point occurring immediately after INPUT FORM I is produced. If errors occur, they are grouped and tallied into 4 types: analysis, rule revision, input transcription, and machine/program failure. When a failure of any type occurs, the INPUT FORM is sent to the staff member responsible for the malfunction. Summaries are compiled each day, and corrective action is swift. Rule revision is presently responsible for most of our errors, as special cases arise, and machine/program failure is the least troublesome. Our INPUT AND CORRECTION PROCEDURE is illustrated in a staff memo (Appendix B.V.).

From the paper tape containing the derived data, Catalog Cards (Step IV.B.) and pages of Continuing Education Abstracts (CEA) (Step IV.C.) are produced. The cards are used for our own library files, and specified test users receive them for evaluation purposes. CEA is produced by photo-offset, and is arranged in catalog card form with the addition of an abstract, and the deletion of some extraneous fields. Examples of CEA and cards are in Appendix A.II and A.III.

Each of these output products are controlled by program tapes in STR-AD, a special auxiliary tape reader cable connected to the Flexowriter. The actual program instructions are available on request, or can be easily adapted by Friden sales representatives. Operator's manuals are not included. This program sequence follows.

LCE FLEXOWRITER INPUT/OUTPUT

SECTION I: GENERAL

For the present, five mylar control tapes and four edge-punched cards are used to control the accurate encoding of document data into punched paper tape on a Flexowriter upper/lower case automatic typewriter. (See Technical Manual for Friden Flexowriter Programatic Automatic Writing Machine, model SPD for technical details). From these data, catalog cards, Continuing Education Abstracts, and computer input paper tape are produced.

A. The sequences of control tapes for specified output follows:

	Catalog Cards	CEA	COMPUTER INPUT TAPE
Control tapes	#1	#1	#1
	#2	#2	#2
	#4	#3	produced as a by-product of either sequence, from No. 2 punch.

B. The function of each control tape and card follows:

CONTROL	ACTION SEQUENCE	OUTPUT
CONTROL TAPE NO. 1 (2 parts)	Read in Flex reader. Controls data format on INPUT FORM I. Inserts switch codes before each of 30 fields in data tape. Note field numbers as the appear in Flex Reader window to check field position. Part II of CT No. 1 lists fields in num~~b~~erical order for visual proofing, after formatted data in INPUT FORM I. Document data tape is read in STRAD for PROOF-FIELDS and FORMAT STEP.	1. Document data tape (No. 1 punch) 2. Formatted INPUT FORM I. (Flex carriage) 3. Proof list of fields (see INPUT AND CORRECTION PROCEDURE)

CONTROL	ACTION SEQUENCE	OUTPUT
CONTROL TAPE NO. 2 (optional)	THIS STEP IS OPTIONAL; USE ONLY IF OUTPUT I IS INACCURATE. Read in STRAD. Document data tape (OUTPUT 1) is read in Flex reader. INPUT FORM I (corrected) in Flex carriage. Most corrections are made by re-punching the entire field in which an error occurs. Proof is run after the formatted input on the INPUT FORM I (corrected) as was done with CONTROL TAPE 1. INPUT FORM I is destroyed. This sequence is repeated until absolute accuracy of input is achieved.	4. Corrected document data tape from No. 1 punch. 5. INPUT FORM I (CORRECTED).
CONTROL TAPE NO. 3	Read in STRAD reader. Corrected document data tape (either OUTPUT 1, or 4) in Flexowriter reader.	7. Computer input tape. 8. Input form II.

CONTROL	ACTION SEQUENCE	OUTPUT
CONTROL TAPE NO. 4	Read in STRAD reader. Corrected document data tape (either OUTPUT 1, 4 or 6) in Flexowriter reader. INPUT FORM II in Flex carriage. If catalog cards only are needed, turn off No. 2 punch.	9. Catalog card data tape. 10. Computer input tape, if No. 2 punch is activated. 11. Input Form II.
CONTROL TAPE NO. 5	Read in STRAD. CEA data tape (OUTPUT 6) read in Flex reader. CEA grid paper in Flex carriage. Page headings are inserted mannually.	12. Formatted entry on CEA grid paper for photo-offset reproduction 30% reduced. 12a. Catalog card data tape produced in No.1 punch.
CAT. A edge-punched card	Read in Flex reader. Looped OUTPUT 9 in STRAD. Load continuous die-cut catalog card stock in Flex carriage. Run twice.	13. Shelf list, and selection code catalog cards.
CAT. B edge-punched card	Read in Flex reader. Looped OUTPUT 9 in STRAD. Load continuous die-cut catalog card stock in Flex carriage. Run once.	14. Main entry catalog card.

CONTROL	ACTION SEQUENCE	OUTPUT
CAT. C edge-punched card	Read in Flex reader. Looped OUTPUT 9 in STRAD. Load continuous die-cut catalog card stock in Flex carriage. Run once for each subject heading. (Field 26) Four maximum.	15. Subject heading catalog card(s)
CAT. D edge-punched card	Read in Flex reader. Looped OUTPUT 9 in STRAD. Load continuous die-cut catalog card stock in Flex carriage. Run once for each added entry. (Field 27) Four maximum.	16. Added entry catalog card(s)

Note: By replacing catalog card stock with 1/4" gridded bond paper, and batching CAT. A-D in author, title, subject groups, book catalog off-set masters may be prepared.

PROJECTED DESIGN:

Steps V through VII of FIG. I are logical extensions of what we are already doing and involved extensive computerization of these processes as well as running tests of various publishing, information retrieval, and statistical analyses. All of these steps are being developed and continually streamlined. Further descriptions of these steps will appear as they solidify in frequent revisions of this document.

APPENDIX A. I.

THE LIBRARY OF CONTINUING EDUCATION at SYRACUSE UNIVERSITY

ACCESSIONS LIST

Volume I Number 9
January 21, 1966

NOTE: The list contains items which have been received this week at the LCE. No attempt has been made to indicate either their permanent value or their potential usefulness. List prices are included if known. The LCE will loan all items listed when they have completed the input phase. For purchase, please do not contact the LCE for them; write directly to the publisher. (Provisional LCE classification codes follow citations when appropriate.)

1. Adair, J. B. Study of illiteracy in Texas as related to vocational education. Texas Education Agency, Austin, Texas, 1964. 72 p. B7

2. Aker, George F. Strategies of leadership for adult basic education. Working paper. Author, Dept. of Education, The Florida State Univ., Tallahass Fla., 1965. 44 p. mimeo.

3. American educational Research Journal. American Educational Research Association, 1201 16th st., N.W., Washington, D.C. 20036. Vol. 1- . Z

4. American Library Association. Adult Services Division. Libraries and literacy activities. (Reprinted from Wilson Library Bulletin, Sept. 1965, pp. 48-50.) ALA. Adult Services Div., 50 E. Huron St., Chicago, Ill. 60611. B7

5. Arbuckle, Dugald S. Counseling: An introduction. Allyn & Bacon, 150 Tremont St., Boston, Mass., 1961. 349 p. 01

6. Bücherei und Bildung. Vol. 16- . Volksbibliothekare, Gartenstrasse 18, Reutlingen, Germany. B83

7. Central Missouri State College. Where are you going, young lady? (Bulletin Vol. 64, no. 9, Feb. 1964.) Central Missouri State College, Warrensburg, Mo.

8. Clark, Elizabeth W. & others. Pakistan: The public health education research project in Dacca. (IN Studies in family planning, no.5, Dec. 1964, pp. 6-12.) The Population Council, 230 Park Ave., NYC 10017. B832

9. Cloutier, Edmond. Canada yearbook. Queen's Printer, Ottawa, Ont., Canada, 196 1197 p. HA744

10. Coates, Albert. The story of the Institute of government. (NUEA studies in university extension education, no. 2.) NUEA, 122 Soc. Sc. Bldg., U. of Minnesota, Minneapolis, Minn., 1944. 76 p. C32

11. Commentary. Vol. 40- . American Jewish Committee, 165 E. 56th St., NYC 100 $8.00/year.

APPENDIX A: II.

COOPERATIVE EXTENSION -- TRAINING

SEE ALSO: URBAN EXTENSION -- TRAINING

1 S3:5

Kalanagi, Christopher J.

An analysis of training needs of extension agents in urban and farm counties; Chapter IV: summary, conclusions and recommendations. Columbus, Ohio. Kalanagi, Christopher J., 1963. 1528 p. typed. Eng. (Ph.D. thesis abstract, Ohio State University) B RE

Purpose: To determine if there are differences in training needed by agricultural youth work and home economics Cooperative Extension agents working in urban and rural counties. To identify the differences.
Method: Questionnaire survey of sample (330) county agricultural, youth work and home demonstration agents in 11 states from the Northeastern and North Central states. Respondents judged degree of training needed in a list of 142 training needs listed under 9 major areas. Data were tabulated by IBM 7090 computer. Significance of differences at the .05 level were calculated by the "Student's" T-test and by Spearman's rank correlation co-efficients.
Findings: Significant differences in training needs were discovered related both to the position and the situation of agents. Differences were greater for youth work agents than for agricultural and home economics agents. Home economics agents require more technical training. All agents require intensive training in the educational process, human development and human relations, program development and communication. Significant differences are listed for each group by specific item within broad areas.

2 P1:3

McNabb, Coy G.

The administrative role of the county extension director in Missouri; chapter VII: summary conclusions and recommendations. Columbus, Ohio, Author, 1964. 20 p. typed. Eng. (Ph. D. thesis Ohio State University) B RE

Purpose: To analyze the administrative role of county extension directors in Missouri. To determine the degree of consensus on role expectations and behavior among county directors and between them and county staff members, district directors and state administrative staff.
Method: Questionnaire completed by 105 staff members in a stratified random sample of 30 counties with 3 or more staff members and by 13 members of the State administrative staff. In the role expectation instrument 59 specific items in 5 broad categories were rated as a measure of expectation. The same items were used to measure performance; a 10-item job satisfaction scale was included. Statistical significance of difference was determined through differences between Percentages test, the Wilcoxon Matched-pairs Signed-ranks test, Spearman's rank-order correlation and the T test.
Major findings: A high degress of consensus on most role expectation items, but definite lack on a few. Similar consensus on most performance items though county staff members were uninformed on some. There is a relationship between job satisfaction and some role expectation items for county staff and a similar relationship with other such items for county directors.
Recommendations: Further research needed.

3 B31:98

U. S. Federal Extension Service.

The development of an aptitude test for the selection of county agricultural agents; a report of the first stage of the study, by Fred P. Frutchey. Washington, Federal Extension Service, 1965. 1510 p. tables. Eng. C RI

Description of studies made by 15 State Extension Services over a 5-year period to set up a system for administering the Missouri County Agent Inventory for beginning agents. Comparisons were made between test scores and job effectiveness and it was found that this aptitude test, while valid in Missouri, was not applicable to other states. However, state tests were highly related to performance in the individual states. A longitudinal 5-year study is projected after which the ratings of the agents' performance will be compared with the predicted ratings. This will constitute a test of the predictive power of the state's inventory for determining effective performance of future beginning agents.

LITERACY EDUCATION

4 E89:12.84

Alesi, Gladys.

Teaching illiterate adults to read. McDonald, Mary, jt. auth. (IN International Reading Association. College-adult reading instruction) Newark, Del., International Reading Association, 1964. 15 pp. 84-99 Eng. C PM

Describes "Operation Second Chance" an 8 week intensive training program for 18 absolute illiterates and 120 functional illiterates. The absolute illiterates, largely English speaking rural migrants, were brought to the point of reading signs, directions on applications, etc., by methods which focused on the experience of the participants, used discussion before all drills and dealt with such practical reading tasks as using a telephone, reading employment ads, cooperative composition of stories, etc. The functionally illiterate group (less than 4th grade) studied elementary school programs (49 received diplomas) literacy exams for citizenship, letter writing and job related tasks.

5 B73:6

Lowdermilk, Max K.

Problems, principles and possible methods for communication with illiterates around the world. Ithaca, N. Y., Dept. of Rural Education, Division Cornell University, 1964. iii,25p. Eng. B RI Bibliography: pp. 22-25. Presented at Extension Seminar, Rural Education 227, Spring, 1964.

There has been some confusion of criteria in the field of literacy but in 1962 UNESCO stated an ideal functional definition -- the essential knowledge and skills which enable a person to en-

APPENDIX A. III

Z62:119

Porcella, Brewster. SHELF LIST CARD

A summary of research on the reading interests and habits of college graduates; report prepared for Adult Services Division, American Library Association Conference, St. Louis, 1964.
Urbana, Library Research Center, Graduate School of Library Science, University of Illinois, 1964. 40p. tables. Eng. Bibliography: pp.35-40.
C ES
READING--RESEARCH
American Library Association. Adult Services Division.

Z62:119

Porcella, Brewster. AUTHOR CARD

A summary of research on the reading interests and habits of college graduates; report prepared for Adult Services Division, American Library Association Conference, St. Louis, 1964.
Urbana, Library Research Center, Graduate School of Library Science, University of Illinois, 1964. 40p. tables. Eng. Bibliography: pp.35-40.
C ES

American Library Association. Adult Services Division.
Porcella. Brewster. ADDED ENTRY CARD

Z62:119

READING--RESEARCH
Porcella, Brewster. SUBJECT HEADING CARD

A summary of research on the reading interests and habits of college graduates; report prepared for Adult Services Division, American Library Association Conference, St. Louis, 1964.
Urbana, Library Research Center, Graduate School of Library Science, University of Illinois, 1964. 40p. tables. Eng. Bibliography: pp.35-40.
C ES

APPENDIX B. I

DOCUMENT WORKSHEET (10/11/65)

Date Cat 1/22/65 eb	Date Anal 1/22/65 eb	Date Chk 2/7/65 rd	Source Doc
Source Cit LCE	1 Z62	2 119	3 n/a

4 Porcella, Brewster.

5 n/a

6 A summary of research on the reading interests and habits of college graduates; report prepared for Adult Services Division, American Library Association Conference, St. Louis, 1964.

7 n/a

8 n/a

9 n/a

10 n/a

11 Urbana,

12 Library Research Center, Graduate School of Library Science, University of Illinois.

13 n/a	14 1964.
15 40p.	16 tables.
17 Eng.	18 n/a

28 reading research
graduate college

29 habits survey library
newspaper magazine
book mass-media

30 Facts gathered from general reading studies are surveyed, with statistical material; studies made by individuals, market research organizations, professionals. A useful, classified bibliography is included.

15 40p.	16 tables.
17 Eng.	18 n/a

19 n/a

20 n/a

21 Bibliography: pp.35-40.	22 n/a

23 C	24 OV	

25 n/a

26
1 READING--RESEARCH
2
3
4

27 1 American Library Association. Adult Services Division.
2
3
4

APPENDIX B. II

INPUT FORM I
PINK DOC. DATA TAPE PROD. IN NO. I PUNCH.

Z62:119

Porcella, Brewster.
A summary of research on the reading
interests and habits of college graduates;
report prepared for Adult Services
Division, American Libarary Association
Conference, St. KOUIS, 1964.
Urbana, Library Research Center. Graduate
School of Library Science, University
of Illinois, 1964. 40 p. tables. Eng.
Bibliography: pp. 35-40. C OV
READING--RESEARCH
American Library Association. Adult
Services Division.
reading research interests graduates
college
habits survey library newpaper magazine
book mass-media
Facts gathered from general reading studies are surveyed,
with statistical material, studies made by
individuals, market research organizations,
professionals. Auseful, classified
bibliography is incluceded.
PROOF I - FIELDS AND FORMAT
1 Z62:/
2 119/
3 /
4 Porcella, Brewster.
/
5 /
6 A summary of research on the reading
interests and habits of college graduates;
report prepared for Adult Services
Division, American Libarary Association
Conference, St. KOUIS, 1964. /
7
/
8 /
9 /
10 /
11 Urbana, /
12 Library Research Center. Graduate
School of Library Science, University
of Illinois, /
13 /
14 1964. /
15 40 p. /
16 tables. /
17 Eng. /
18 /

19 /
20 /
21
Bibliography: pp. 35-40. /
22 /
23 C /
24 OV /
25 /
26a READING--RESEARCH
/
26b /
26c /
26d /
27a American Library Association. Adult
Services Division.
/
27b /
27c /
27d /
28 reading research interests graduates
college
/
29 habits survey library newpaper magazine
book mass-media
/
30 Facts gathered from general reading studies are surveyed,
with statistical material, studies made by
individuals, market research organizations,
professionals. Auseful, classified
bibliography is inclueded.
/

APPENDIX B.III

```
INPUT FORM I (CORRECTED)  2 7 1966
GRAY DOC. DATA TAPE PROD. IN NO. I PUNCH

                              Z62:119
Porcella, Brewster.
  A summary of research on the reading interests
and habits of college graduates; report prepared
for Adult Services Division, American Library
Association Conference, St. Louis, 1964.
Urbana, Library Research Center, Graduate School
of Library Science, University of Illinois,
1964. 40p.  tables.  Eng.  Bibliography: pp.35-40.
C ES
READING--RESEARCH
American Library Association. Adult Services
  Division.

PROOF-FIELDS AND FORMAT

1 Z62:/
2 119/
3 /
4 Porcella, Brewster.
/
5 /
6  A summary of research on the reading interests
and habits of college graduates; report prepared
for Adult Services Division, American Library
Association Conference, St. Louis, 1964. /
7 /
8 /
9 /
10 /
11
Urbana, /
12 Library Research Center, Graduate School
of Library Science, University of Illinois, /
13 /
14
1964. /
15 40p.  /
16 tables.  /
17 Eng.  /
18 /
19 /
```

16 tables. /
17 Eng. /
18 /
19 /
20 /
21 Bibliography: pp.35-40. /
22 /
23
C /
24 ES /
25 READING--RESEARCH
/
26a /
26b /
26c /
26d /
27a American Library Association. Adult Services
Division.
/
27b /
27c /
27d /
28 /
29 /
30

9

APPENDIX B.IV

INPUT DATE 2 7 1966
INPUT FORM II: CATALOG CARDS, & COMPUTER TAPE BI-PRODUCTS
Z62:119

Porcella, Brewster.
A summary of research on the reading interests and habits of college graduates; report prepared for Adult Services Division, American Library Association Conference, St. Louis, 1964.
Urbana, Library Research Center, Graduate School of Library Science, University of Illinois, 1964. 40p. tables. Eng. Bibliography: pp.35-40.
C ES READING--RESEARCH
American Library Association. Adult Services Division.

APPENDIX B.V

INPUT AND CORRECTION PROCEDURE
(Provisional)

Memo: T-RM-72 TO: Staff and Files FROM: [redacted] 7 Jan 66

General:

(See FIG. I.) Documents are received, [1], analyzed and the appropriate data are extracted and typed on DOCUMENT WORKSHEETS by analysts, including index terms and abstracts where required [2].

The DOCUMENT WORKSHEETS are checked for accuracy [3], and corrected; the documents are then shelved [4] and the worksheets sent to the machine room [5].

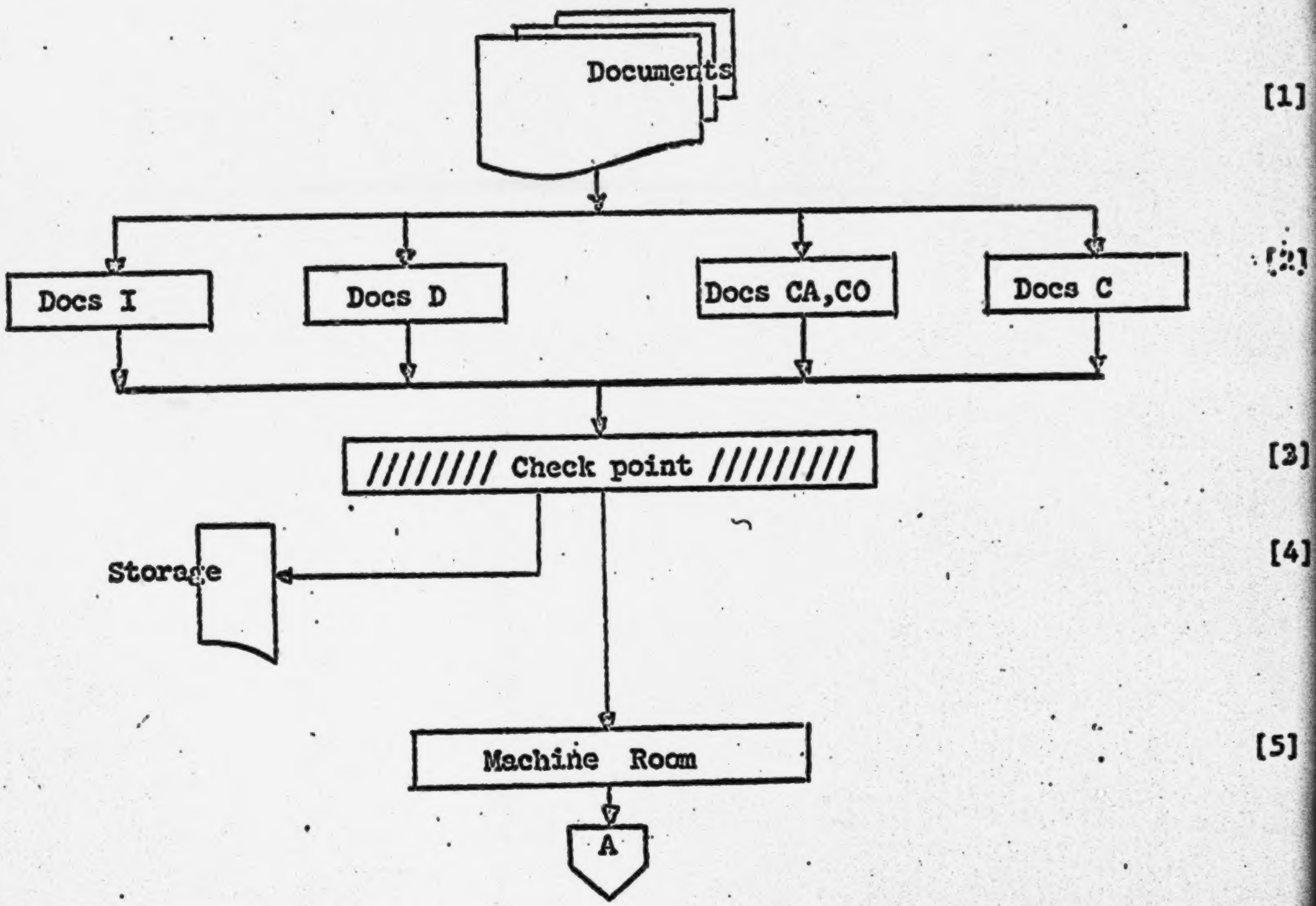


FIG. I

In the machine room, the Flexowriter operator punches the data from the WORKSHEE into paper tape, producing at the same time INPUT FORM I [6] (FIG. II). The input data is then read from the paper tape by the Flexowriter and printed in list form, immediately under the formatted data on INPUT FORM I, headed PROOF I--FIELDS AND FORMAT [7] (see sample INPUT FORM I). The WORKSHEET, gray paper tape, and INPUT FORM I are sent to checkers [8]. Then, INPUT FORM I, as corrected by the checkers, is returned with its paper tape to the Flexowriter

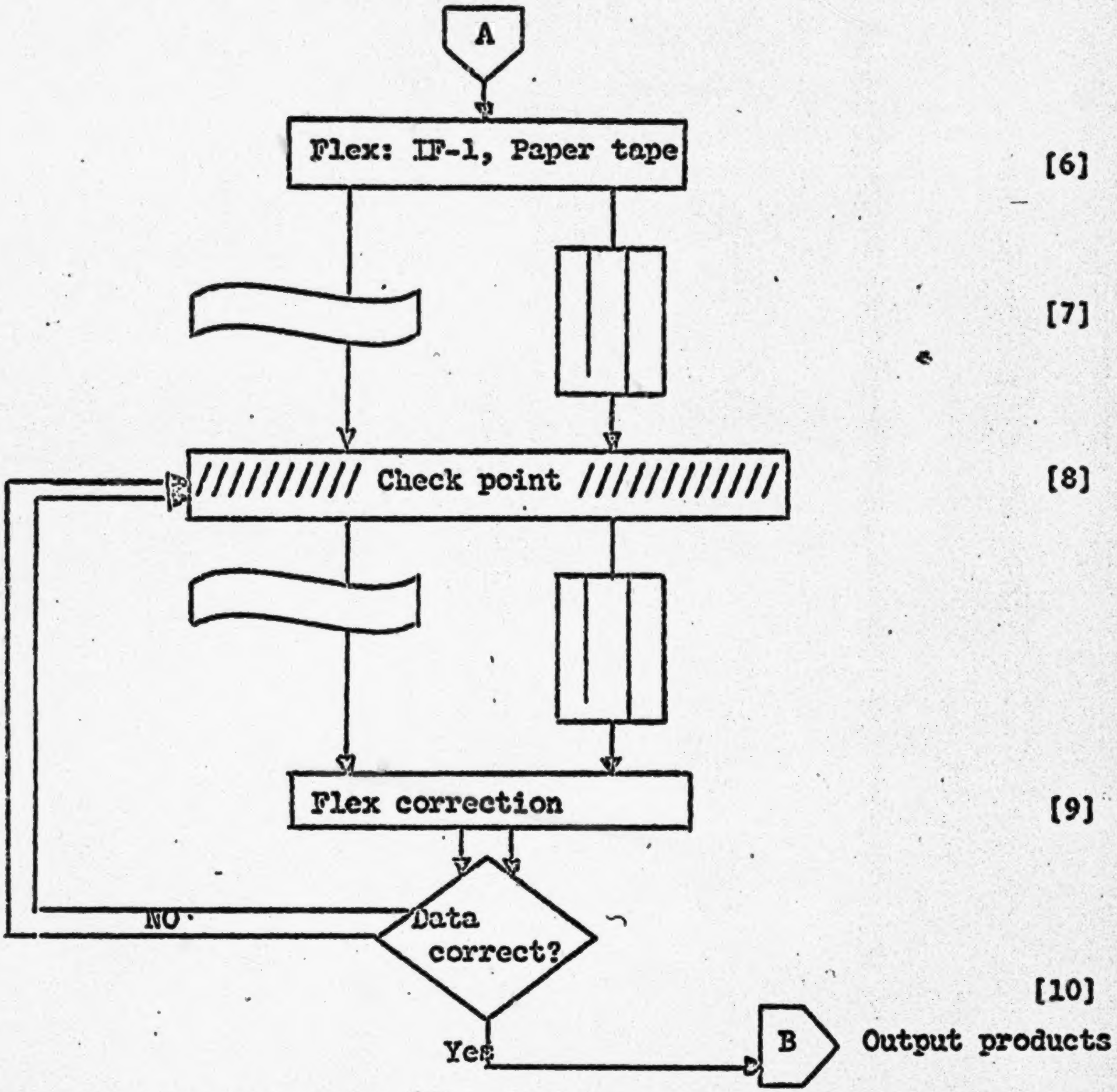

A
Flex: IF-1, Paper tape
[6]
[7]
////////// Check point ////////////
[8]
Flex correction
[9]
NO
Data correct?
[10]
Yes
B
Output products

FIG. II

operator for paper tape correction [9], which generates a new paper tape and a new INPUT FORM I (CORRECTED) [10] which is again returned to checkers. This cycl is repeated until all data and format parameters have been met.

CHECKING AND CORRECTION PROCEDURE

We will now consider in detail checking and correcting procedures for step [8] ab the key to the success or failure of the input system. (Refer to DOCUMENT WORKSHEET and INPUT FORM I).

Memo: T-D-72

1. From the Machine Room, the checker receives
   - A. DOCUMENT WORKSHEET
   - B. INPUT FORM I, or INPUT FORM I (CORRECTED)
   - C. Gray envelope with gray Flexowriter tape in it, labelled with the document number

2. Place DOCUMENT WORKSHEET (DWS) next to the INPUT FORM (IF-I); under the heading PROOF I--FIELDS AND FORMAT, on IF-I are listed fields 1-30 and the data contained in each field. Check off each field on the DWS against each field.on the IF-1 and PROOF for:
   1. Spelling and capitalization correct?
   2. Punctuation correct?
   3. Right data in correct field?

Circle incorrect data in red and draw a line to the white space on either side of the center column and indicate corrected data. What is written here directs the machine operator to correct.

Next, the data in each field of the PROOF-FIELDS AND FORMAT is compared with its position in the formatted first section of INPUT FORM I. The major points to watch out for in this stage are:

1. Carriage returns
2. Spacing, both within and between fields
3. Indentions

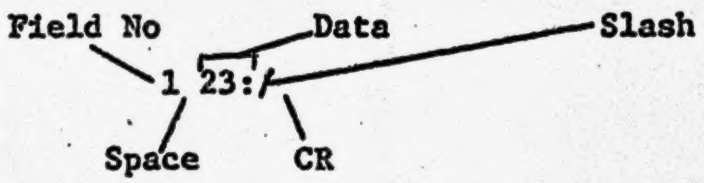
The control program for the FIELDS AND FORMAT section formats each field in the following form.

1 Data/

carriage return (to position for next field)

I. CARRIAGE RETURNS

Now, refer to sample INPUT FORM I (Doc. No. 23:A1/11(4.212), field No. 1. It looks like this:



It is a correct entry.

Incorrect forms of these data can be:

a) 1 23:/	diagnosis: a CR was mistakenly punched at the beginning of the field during input.
b) 1 23: /	~diagnosis: a CR was mistakenly punched at the end of the field during input.

These errors will be indicated in the actual input stage above the PROOF section as follows:

a) 23:A1/11(4.212
Kreitlow, Burton W.
A comp......etc.

23:

b) A1/11(4.212
Kreitlow, Burton W.
A comp......etc.

2. SPACING AND INDENTIONS.

Refer to Field 6 (title), 12 (publisher), and 17 (language)

6 a comparison...etc. /	diagnosis: two spaces at beginning and end; OK
12 AEA of the USA, /	diagnosis: one Space at end; OK.
17 Eng. /	diagnosis: two spaces at end; OK.

3. FIELDS WITH AUTOMATIC CARRIAGE RETURNS AND NOTES:

	1 Class No	2 Doc No	3 Class Code	4 Main entryP	5 Main entryC	6 Title	7 Jt. Auth	8 Editor	9 Sponsor	10 Found in	11 Place	12 Pub.	13 Copyt date	14 Pub date	15 Pagin	16 Phsy. desc	17 Lang
COMPUTER	D	D	N	⑤	④	D	O	O	O	O	D	D	O	D	O	O	D
CEA	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
CATALOG CDS.																	
Main entry	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Added entries	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shelf card and	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Selection file	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X

NOTES

D= Data is always in this field.

N= This field not filled at present.

O= Optional field; data may or may not be in this field.

⑤ Number refers to alternate field, if data is not entere

▭ = Characters are entered automatically by Flexowriter

1= Field 18
catalog c
annuals,

DERIVED DATA: FIELD UTILIZATION

14 Pub date	15 Pagin	16 Phsy. desc	17 Lang	18 Freq	19 Ser. cont. Reprint	20 Thesis	21 Bib note	22 Price	23 Sel code	24 Form code	25 Notes Holdings	26 Subj hding	27 Add entries	28 Terms I	29 Terms II	30 Abstract	
D	O	O	D	O	O	O	O	O	D	D	O	O	O	O	O	O	▨
X	X	X	X	X	X	X	X	X	X	X							▨
X	X	X	X	X[1]	X	X	X		X	X	X						▨
X	X	X	X	X[1]	X	X	X		X	X	X						▨
X	X	X	X	X[1]	X	X	X		X	X	X	X	X				▨
X	X	X	X	X[1]	X	X	X		X	X	X	X	X				▨

1= Field 18 is used in open entry catalog cards only, eg. journals, annuals, etc.

in this field.

ata is not entered here.

y by Flexowriter program, if field is filled.

ATION IN OUTPUT

APPENDIX B. VI

FLEXOWRITER CONTROL TAPE NO. 1:
MASTER INPUT CONTROL PROGRAM

(See Appendix 37 for a description of its use)

FUNCTION CODE KEYS (NON PRINTING) CONTROL TAPE NO. 1

KEYS	ASSIGNMENT	FUNCTIONS IN	REPRODUCES IN
F1 MNP STOP		Page 1 of 2	
F2			
[illegible]			
F4			
F5			
F6			
F7			
F8			
F9			
F10			
F11			
F12			
F13			
SWITCHES			
1			
2	Refer to worksheet, appendix 9, for field #		
3	identifications refered to in Flex programs.		
4			

NOTES Switches: STRAD ON . Run on blank paper, 4" column
NO 2 PUNCH OFF tab 68, margin 1½"
TOGGLE SEL

IN 1: CONTROL TAPE NO. 1 OUT : 1 DOCUMENT DATA TA
2: DATA TAPE

Flex carriage: INPUT FORM I, then PROOF - FIELDS AND FORMAT
when data tape is placed in No 2 reader.
Items in red are entered manually.
Whenever a blank code (B) appears, the number of the field is inked
in for visual checking in NO 1 reader's window.

IN 1

CONTROL TAPE ID 1 (DOCUMENT DATA TAPE, AND PROOF — FIELDS AND FORMAT)

10TF OFF LC ON1 NP 40OCR 10TF PR OFF CR UC I N P U T SP F O R M SP I LDCS CURC PINK SP D O C . SP D A T A SP T A P E SP P R O D . SP I N SP N O . SP

(Field 3) TSR LC BL NP SW ALL8 PR OFF CR ON1 STB (Field 4) CR TSR BL LC NP SW ALL8 PR STOP (Field 5) CR TSR BL LC NP SW ALL8 PR SP SP STOP (Field 6) 2SP BL TSR LC

(Field 9) LC BL S P O N S O R . SP SP TSR NP SW ALL8 PR STOP (Field 10) SP SP BL TSR LC NP SW ALL8 PR STOP (Field 11) SP TSR BL LC NP SW ALL8 PR STOP (Fiel

BL TSR LC NP SW ALL8 PR STOP (Field 16) SP SP BL TSR LC NP SW ALL8 PR STOP (Field 17) SP SP BL TSR LC NP SW ALL8 PR STOP (Field 18) SP SP BL TSR LC NP SW ALL8 PR STOP (Fi

LC STOP (Field 22) SP SP BL TSR LC NP SW ALL8 PR STOP (Field 23) $P TSR BL LC NP SW ALL8 PR STOP (Field 24) SP TSR BL LC NP SW ALL8 PR OFF CR ON1 STOP (Field 25) CR

SW ALL8 PR STOP (Field 26d) CR TSR BL LC NP SW ALL8 PR STOP (Field 27a) CR TSR BL LC NP SW ALL8 PR STOP (Field 27b) CR TSR BL LC NP SW ALL8 PR STOP (Field 27c) CR TSR

Gray Doc DATA tape

CONTROL TAPE ID 1: PROOF SECTION

(Field 30) CR TSR BL LC NP SW STB 10TF 20SP TPS FR STOP Removed, labelled and put in STRAD OFF OCR UC P R O O F SP I SP LC - SP UC F I E L D S SP A N D SP

(10) SP SW / CR (11) SP SW / CR (12) SP SW / CR (12) SP SW / CR (13) SP SW / CR (14) SP SW / CR (15) SP SW / CR (16) SP SW / CR (17) SP SW / CR (18) SP SW / CR (19) SP SW

CR (26d) SP SW / CR (27a) SP SW / CR (27b) SP SW / CR (27c) SP SW / CR (27d) SP SW / CR (28) SP SW / CR (29) SP SW / CR (30) SP SW / CR STOP

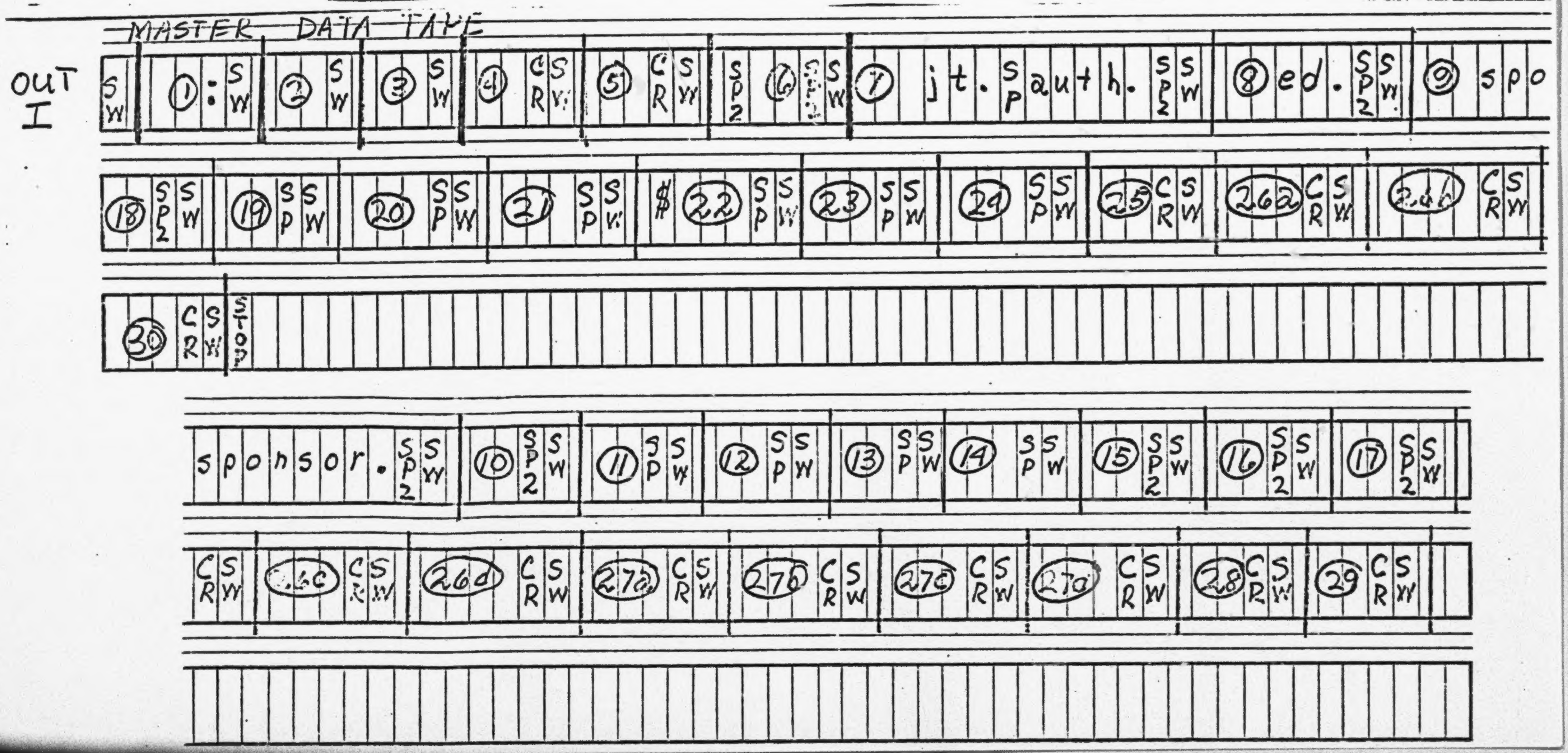
```
NO. SP 1 SP PUNCH. CR CR LC TAB ONI NP SW ALL8 PR STOP (Field 1) UC : EL LC TSR NP SW ALL8 PR STOP (Field 2) TSR LC BL NP SW ALL8 PR STOP
2SP BL TSR LC NP SW ALL8 PR STOP (Field 7) LC BL jt. SP auth. SP SP TSR NP SW ALL8 PR STOP (Field 8) LC BL ed. SP SP TSR NP SW ALL8 PR STOP
(Field 12) SP TSR BL LC NP SW ALL8 PR STOP (Field 13) SP SP TSR BL LC NP SW ALL8 PR STOP (Field 14) SP SP TSR BL LC NP SW ALL8 PR STOP (Field 15) SP SP
(Field 19) SP SP BL TSR LC NP SW ALL8 PR STOP (Field 20) SP SP BL TSK LC NP SW ALL8 PR STOP (Field 21) SD SP BL TSR LC NP SW ALL8 PR STOP UC $ BL
d 25) CR TSR BL LC NP SW ALL8 PR STOP (Field 26a) CR TSR BL LC NP SW ALL8 PR STOP (Field 26b) CR TSR BL LC NP SW ALL8 PR STOP (Field 26c) CR TSR BL LC NP
7c) CR TSR BL LC NP SW ALL8 PR STOP (Field 27d) CR TSR BL LC NP SW ALL8 PR STOP (Field 28) CR TSR BL LC NP SW ALL8 PR STOP (Field 29) CR TSR BL LC NP SW ALL8 PR STOP
AND SP FORMAT CR SW ① SP SW / CR ② SP SW / CR ③ SP SW / CR ④ SP SW / CR ⑤ SP SW / CR ⑥ SP SW / CR ⑦ SP SW / CR ⑧ SP SW / CR
CR ⑲ SD SW / CR ⑳ SP SW / CR ㉑ SP SW / CR ㉒ SP SW / CR ㉓ $P SW / CR ㉔ SP SW / CR ㉕ SP SW / CR (26a) SP SW / CR (26b) SP SW / CR (26c) SP SW /
STOP //                                                  SEE SECOND SHEET FOR OUT I
```

NOTES

| = all 8 channels punched, for locating field positions during correction phase; (see CONTROL TAPE NO 2 specs.); they will appear in the window of number I reader.

③ = circled numbers refer to data entered manually during input.

MASTER DATA TAPE


OUT I
S W | ① : S W | ② S W | ③ S W | ④ C R S W | ⑤ C R S W | S P 2 ⑥ S P 2 S W | ⑦ j t . S P a u t h . S P 2 S W | ⑧ e d . S P 2 S W | ⑨ s p o
⑱ S P 2 S W | ⑲ S P S W | ⑳ S P S W | ㉑ S P S W | $ ㉒ S P S W | ㉓ S P S W | ㉔ S P S W | ㉕ C R S W | (26a) C R S W | (26b) C R S W
㉚ C R S W | S T O P
s p o n s o r . S P 2 S W | ⑩ S P 2 S W | ⑪ S P S W | ⑫ S P S W | ⑬ S P S W ⑭ S P S W | ⑮ S P 2 S W | ⑯ S P 2 S W | ⑰ S P 2 S W
C R S W | (26c) C R S W | (26d) C R S W | (27a) C R S W | (27b) C R S W | (27c) C R S W | (27d) C R S W | ㉘ C R S W | ㉙ C R S W

FLEXOWRITER CONTROL TAPE NO. 2:

CORRECTION PROGRAM

(See Appendix 37 for a description of its use)

CONTROL TAPE NO. 2

NOTES "CORRECTION TAPE"

DATA TAPE IN FLEX READER

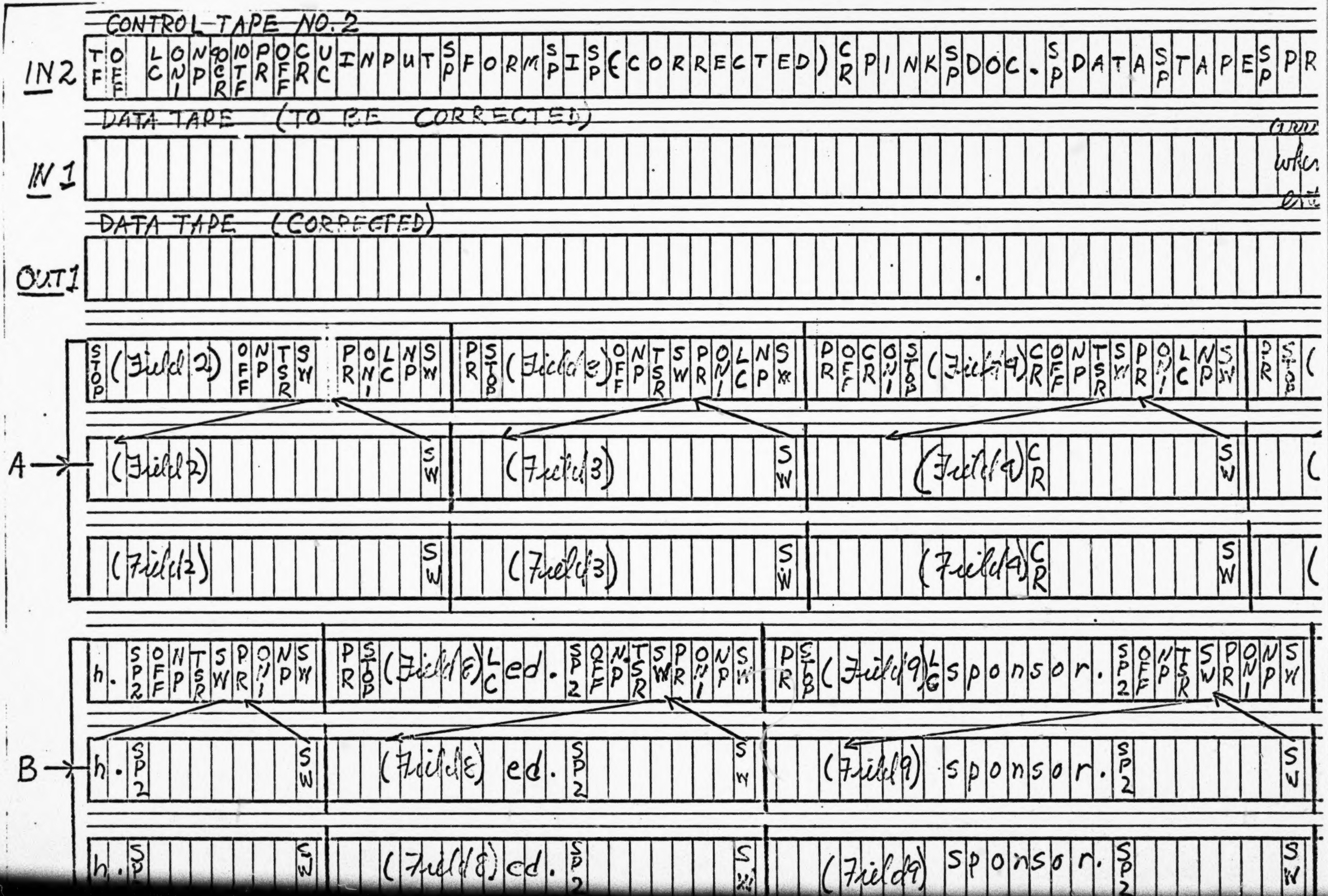
CONTROL TAPE NO 2 IN STRAD (FIELD NUMBERS HAND-WRIT

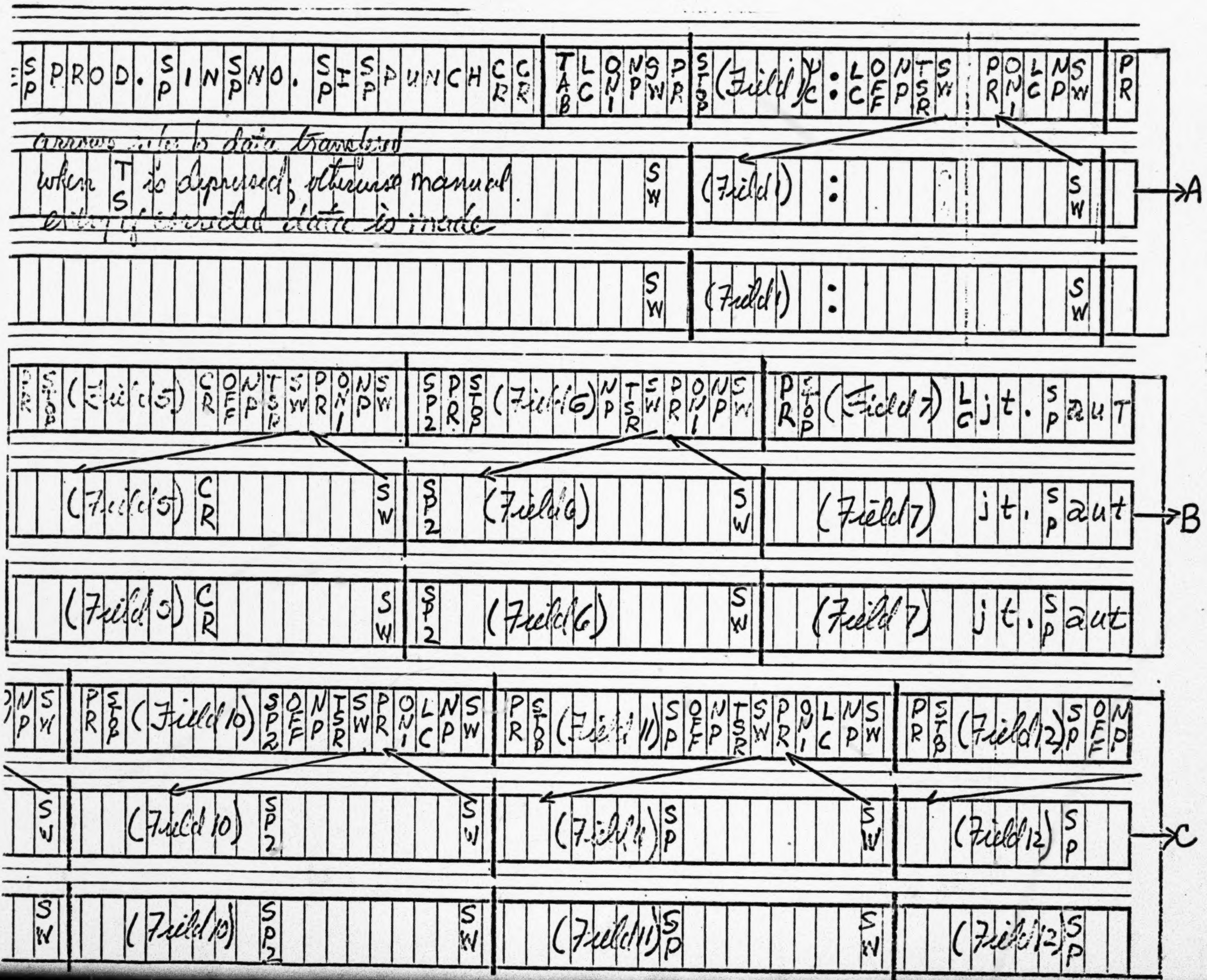
SWITCHES: SEL.,
ON,
STRAD ON

(Run on 4" column paper.
Tab 68, margin 1½"

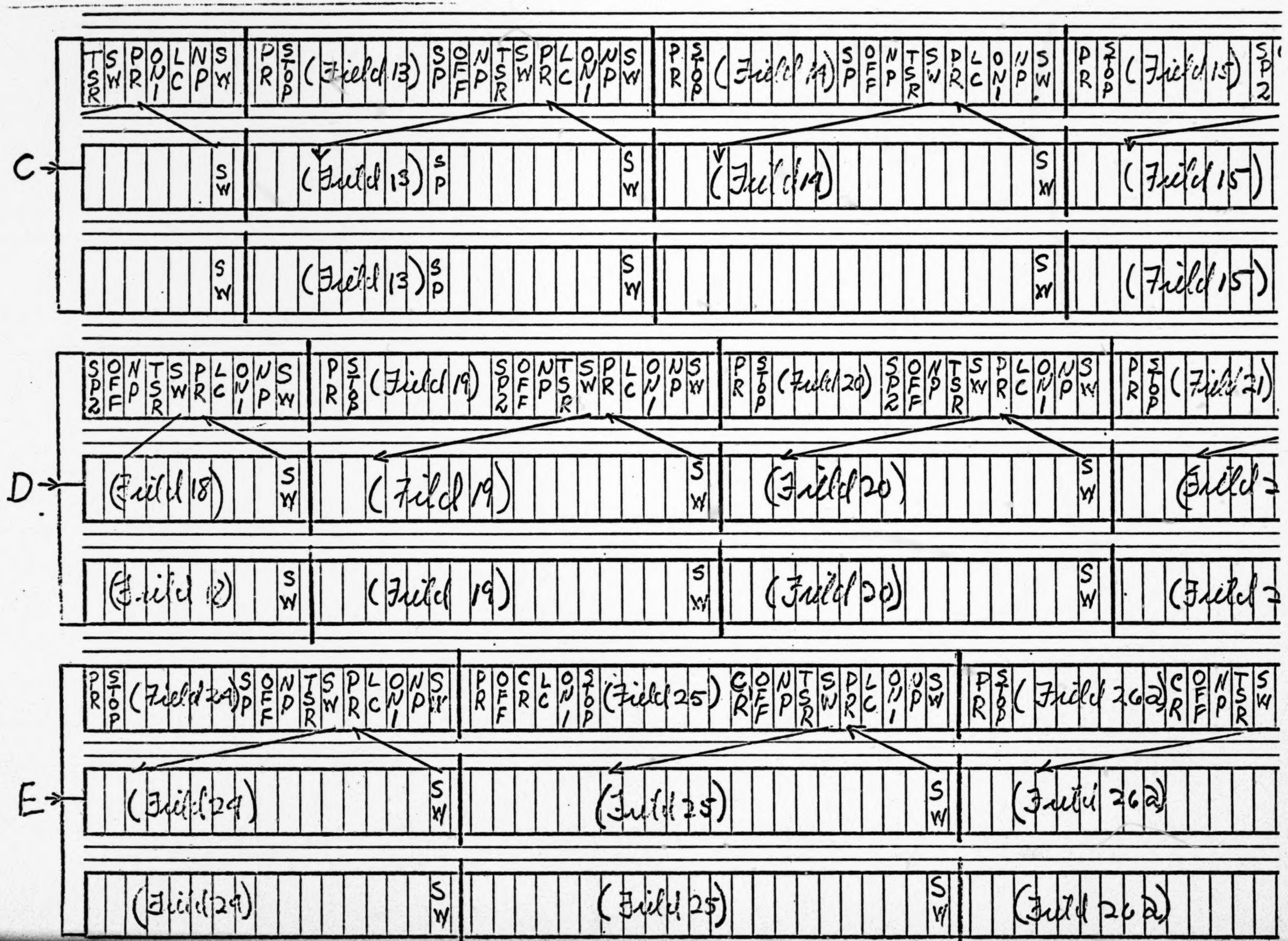
OUT: Corrected doc data tape (No1 Punch)
Corrected input form I and PROOF-FIELDS AND FORMAT

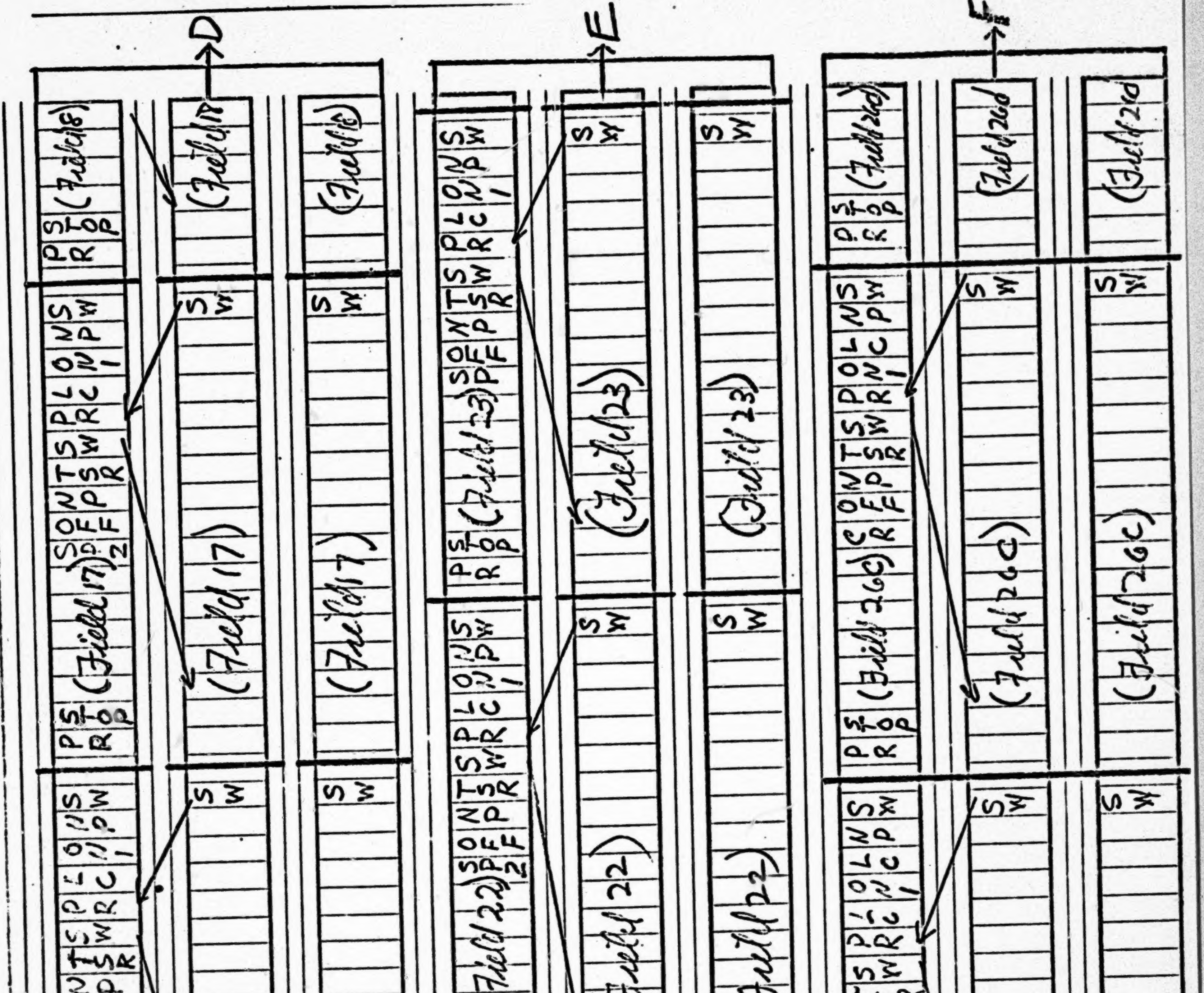
| = all 8 holes punched; to identify field to be punched in Flex. rea
window


CONTROL-TAPE NO. 2
IN2
T F O F F L C O N I N P 9 O C R 10 T F P R O F F C R U C I N P U T S P F O R M S P I S P (C O R R E C T E D) C R P I N K S P D O C . S P D A T A S P T A P E S P P R
DATA TAPE (TO BE CORRECTED)
IN1
DATA TAPE (CORRECTED)
OUT1
STOP (Field 2) OFF NP TSR SW PR ONI LC NP SW
PR STOP (Field 3) OFF NP TSR SW PR ONI LC NP SW
PR OFF CR ONI STOP (Field 4) CR OFF NP TSR SW PR ONI LC NP SW
PR STOP (
A
(Field 2) SW
(Field 3) SW
(Field 4) CR SW
(
(Field 2) SW
(Field 3) SW
(Field 4) CR SW
(
h. SP2 OFF NP TSR SW PR ONI NP SW
PR STOP (Field 8) LC ed. SP2 OFF NP TSR SW PR ONI NP SW
PR STOP (Field 9) LC sponsor. SP2 OFF NP TSR SW PR ONI NP SW
B
h. SP2 SW
(Field 8) ed. SP2 SW
(Field 9) sponsor. SP2 SW
h. SP SW
(Field 8) ed. SP2 SW
(Field 9) sponsor. SP2 SW


SP PROD. SP INSPNO. SP IP SP PUNCH CR CR
TAB LC ONI NP SW PR
STOP (Field 1) UC : LC OFF NP TSR SW
PR ONI LC NP SW
PR
SW (Field 1) : SW
A
PR STOP (Field 5) CR OFF NP TSR SW PR ONI NP SW
SP2 PR STOP (Field 6) NP TSR SW PR ONI NP SW
PR STOP (Field 7) LC j t. SP aut T
(Field 5) CR SW
SP2 (Field 6) SW
(Field 7) j t. SP aut
B
NP SW
PR STOP (Field 10) SP2 OFF NP TSR SW PR ONI LC NP SW
PR STOP (Field 11) SP OFF NP TSR SW PR ONI LC NP SW
PR STOP (Field 12) SP OFF NP
SW (Field 10) SP2 SW
(Field 11) SP SW
(Field 12) SP
C

arrows refer to data transferred when TS is depressed; otherwise manual entry of corrected data is made


C
TSR SW PR ONI LC NP SW
PR STOP (Field 13) SP OFF NP TSR SW PR LC ONI NP SW
PR STOP (Field 14) SP OFF NP TSR SW PR LC ONI NP SW
PR STOP (Field 15) SP2
SW (Field 13) SP SW (Field 14) SW (Field 15)
SW (Field 13) SP SW SW (Field 15)
D
SP2 OFF NP TSR SW PR LC ONI NP SW
PR STOP (Field 19) SP2 OFF NP TSR SW PR LC ONI NP SW
PR STOP (Field 20) SP2 OFF NP TSR SW PR LC ONI NP SW
PR STOP (Field 21)
(Field 18) SW (Field 19) SW (Field 20) SW (Field 2
(Field 18) SW (Field 19) SW (Field 20) SW (Field 2
E
PR STOP (Field 24) SP OFF NP TSR SW PR LC ONI NP SW
PR OFF CR LC ONI STOP (Field 25) CR OFF NP TSR SW PR LC ONI NP SW
PR STOP (Field 26a) CR OFF NP TSR SW
(Field 24) SW (Field 25) SW (Field 26a)
(Field 24) SW (Field 25) SW (Field 26a)


D
E
(Field 15)
(Field 16)
(Field 17)
(Field 18)
(Field 21)
(Field 22)
(Field 23)
(Field 26b)
(Field 26c)
(Field 26d)
S W
$

FLEXOWRITER CONTROL TAPE NO. 3:

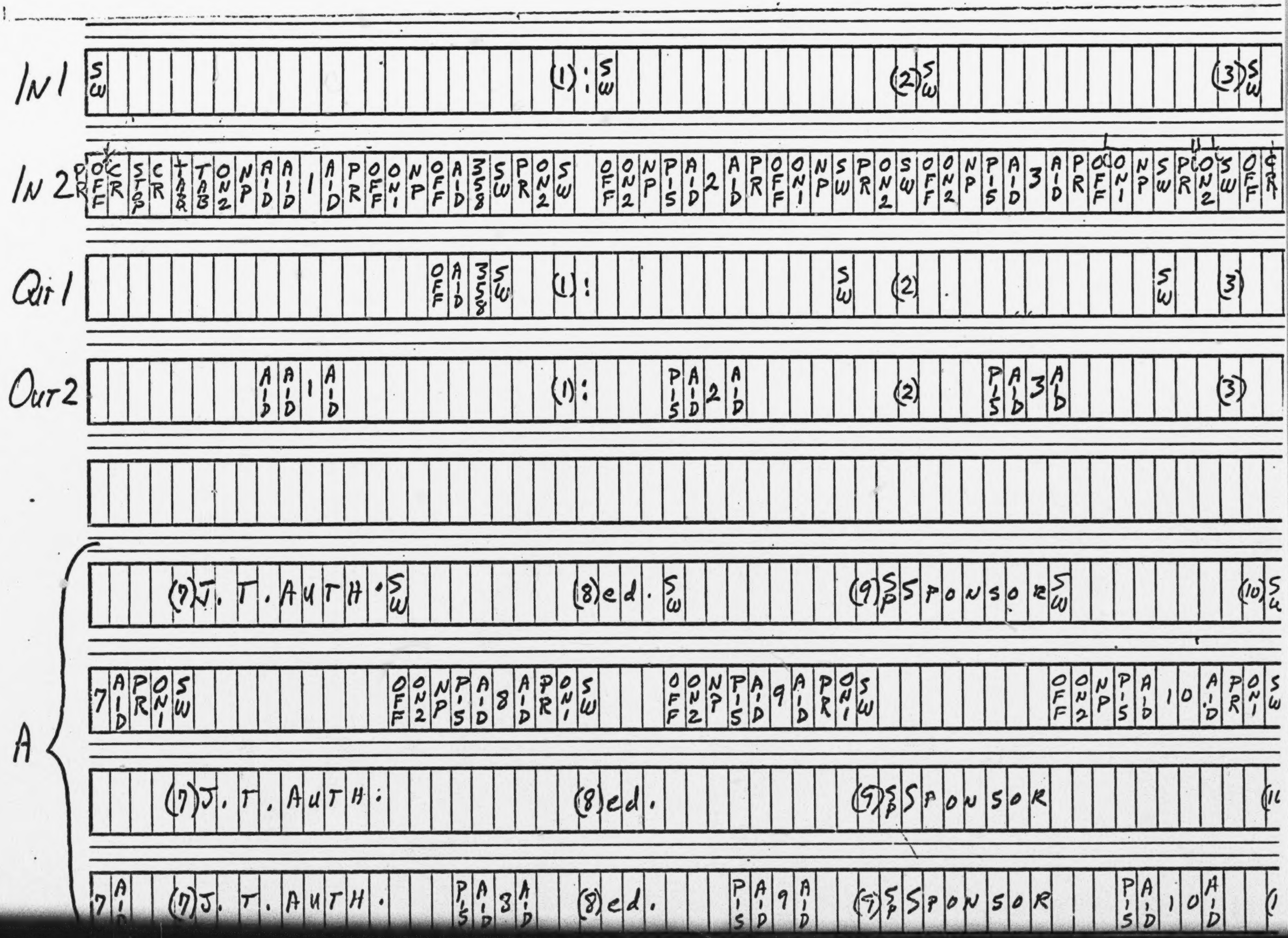
ABSTRACT JOURNAL DATA TAPE AND COMPUTER INPUT DATA TAPE DERIVED.

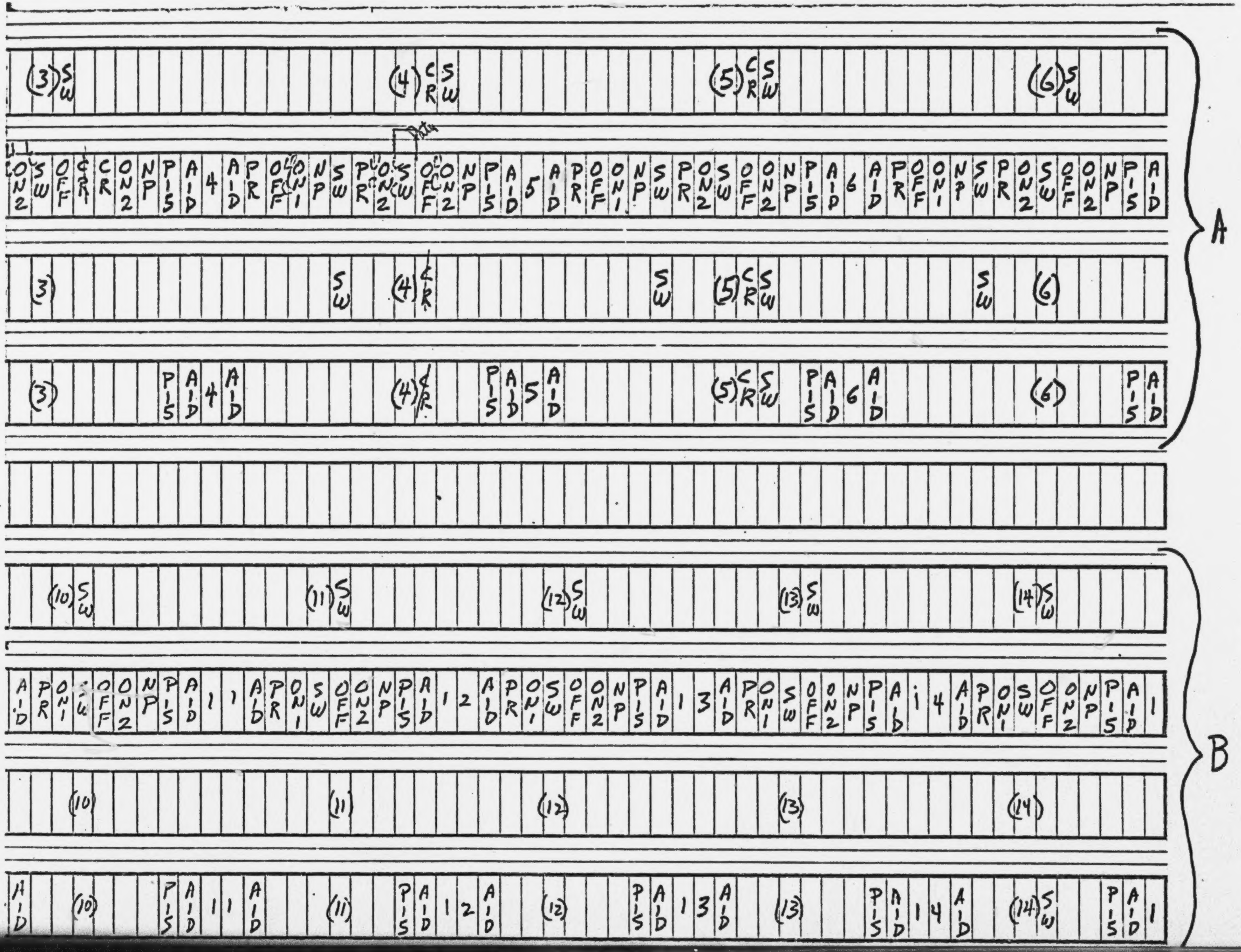
(See Appendix 37 for a description of its use)

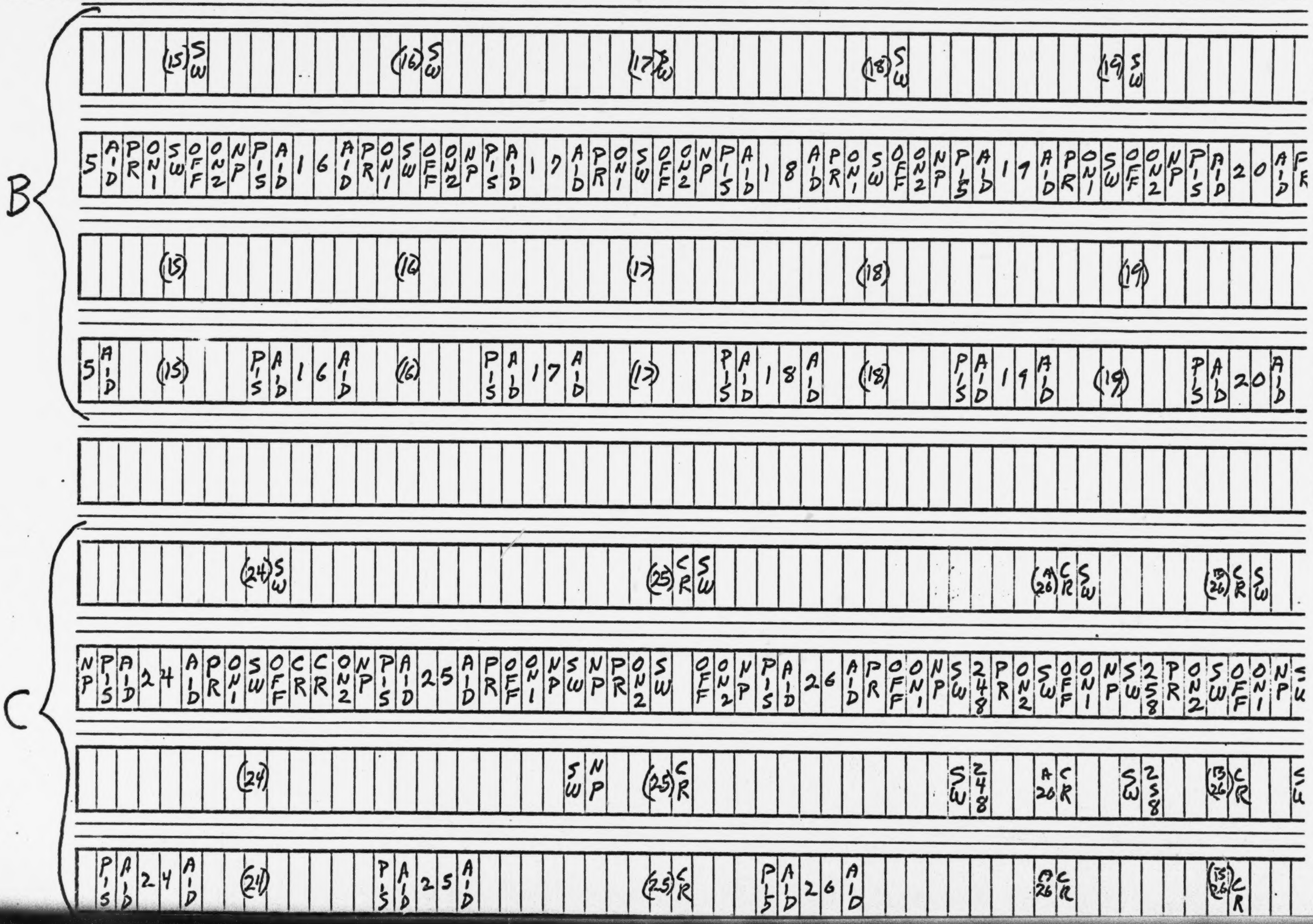
CONTROL TAPE NO. 3

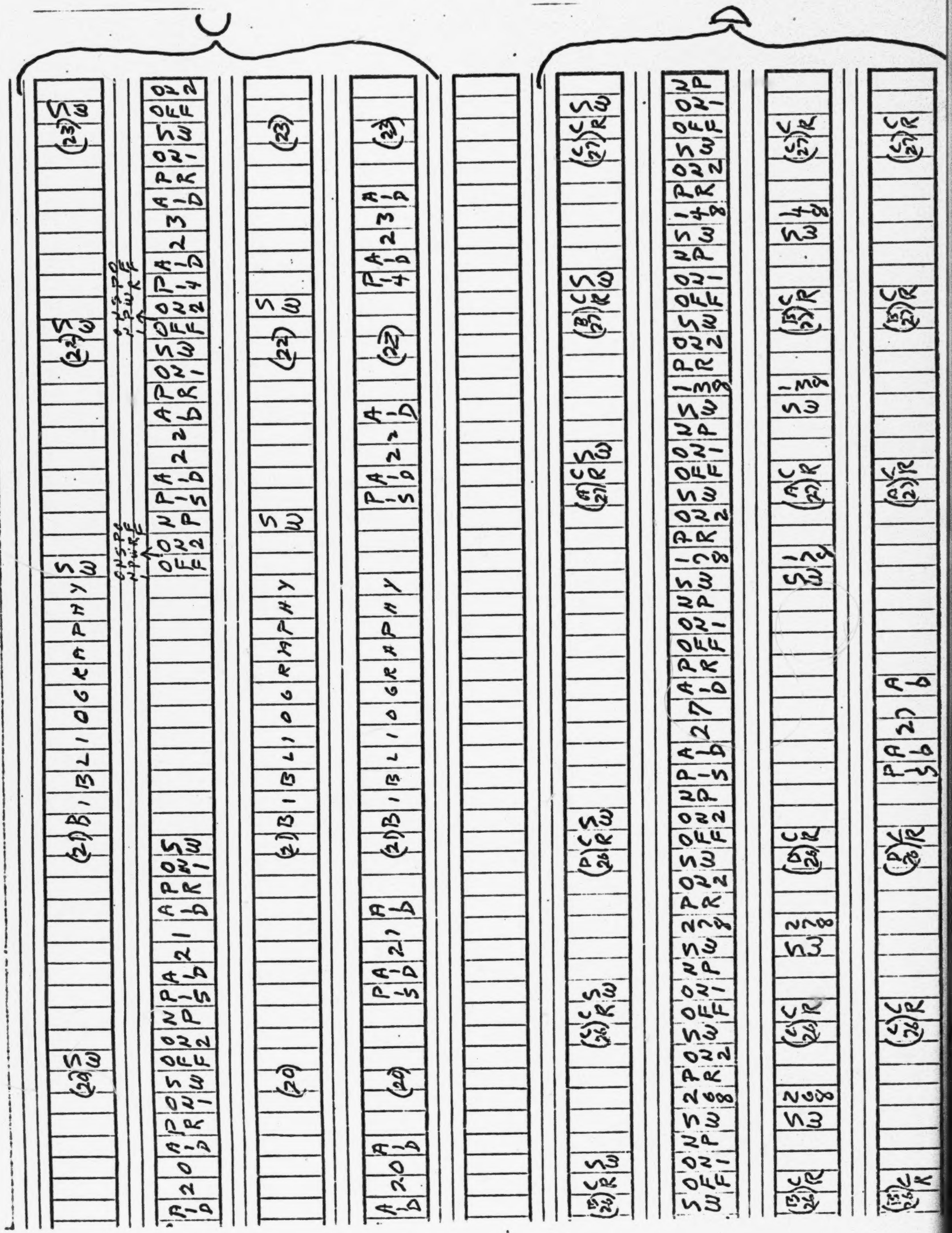
NOTES INPUT FORM

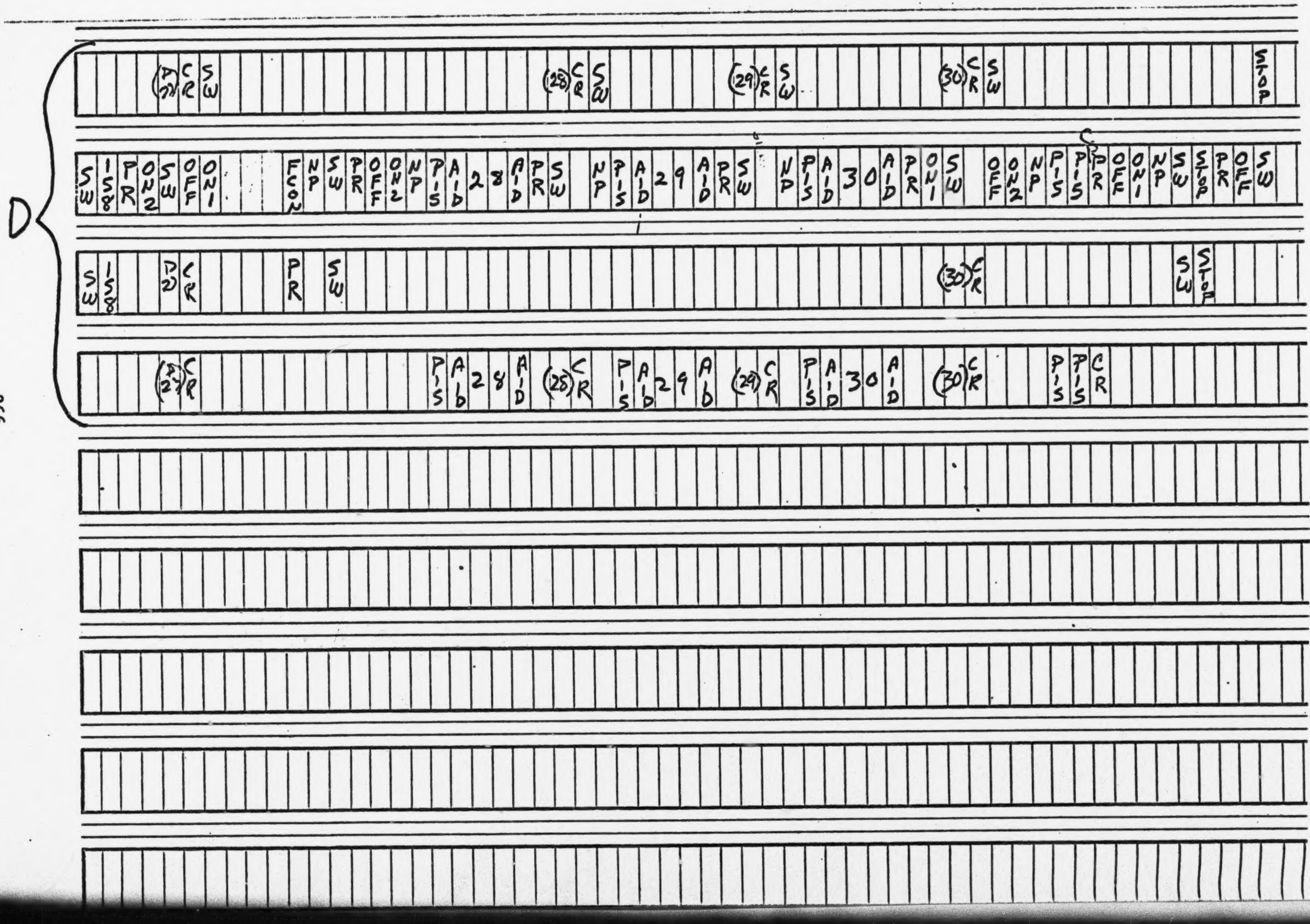
DATA TAPE IN FLEXO AND PROGRAM TAPE
THAT GIVES COMPUTER AND CEA OUTPUT TAP
IN STRAD.


In 1 SW (1): SW (2) SW (3) SW
In 2 PR OFF CR STOP CR TAB TAB ON2 NP AID AID 1 AID PR OFF ON1 NP OFF AID 358 SW PR ON2 SW OFF ON2 NP PIS AID 2 AID PR OFF ON1 NP SW PR ON2 SW OFF ON2 NP PIS AID 3 AID PR OFF ON1 NP SW PR ON2 SW OFF CR
Out 1 OFF AID 358 SW (1): SW (2) SW (3)
Out 2 AID AID 1 AID (1): PIS AID 2 AID (2) PIS AID 3 AID (3)
A
(7) J. T. AUTH. SW (8) ed. SW (9) SP SPONSOR SW (10) SW
7 AID PR ON1 SW OFF ON2 NP PIS AID 8 AID PR ON1 SW OFF ON2 NP PIS AID 9 AID PR ON1 SW OFF ON2 NP PIS AID 10 AID PR ON1 SW
(7) J. T. AUTH: (8) ed. (9) SP SPONSOR (1
7 AI (7) J. T. AUTH. PIS AID 8 AID (8) ed. PIS AID 9 AID (9) SP SPONSOR PIS AID 10 AID (

A
(3) SW (4) CS RW (5) CS RW (6) SW
ON2 SW OFF CR CR ON2 NP P-S A-D 4 A-D PR OFF ON1 NP SW PR ON2 SW OFF ON2 NP P-S A-D 5 A-D PR OFF ON1 NP SW PR ON2 SW OFF ON2 NP P-S A-D 6 A-D PR OFF ON1 NP SW PR ON2 SW OFF ON2 NP P-S A-D
(3) SW (4) CR SW (5) CS RW SW (6)
(3) P-S A-D 4 A-D (4) CR P-S A-D 5 A-D (5) CR SW P-S A-D 6 A-D (6) P-S A-D
B
(10) SW (11) SW (12) SW (13) SW (14) SW
A-D PR ON1 SW OFF ON2 NP P-S A-D 1 1 A-D PR ON1 SW OFF ON2 NP P-S A-D 1 2 A-D PR ON1 SW OFF ON2 NP P-S A-D 1 3 A-D PR ON1 SW OFF ON2 NP P-S A-D 1 4 A-D PR ON1 SW OFF ON2 NP P-S A-D 1
(10) (11) (12) (13) (14)
A-D (10) P-S A-D 1 1 A-D (11) P-S A-D 1 2 A-D (12) P-S A-D 1 3 A-D (13) P-S A-D 1 4 A-D (14) SW P-S A-D 1


B
C


(20)
(21) BIBLIOGRAPHY
(22)
(23)
S W
A 20 A
P A 21 A
P A 22 A
P A 23 A
P A 27 A
C R
C S R W


D
(P 27) C R SW (28) C R SW (29) C R SW (30) C R SW STOP
SW IS8 PR ON2 SW OFF ON1 FCON NP SW PR OFF ON2 NP PIS AID 28 AID PR SW NP PIS AID 29 AID PR SW NP PIS AID 30 AID PR ON1 SW OFF ON2 NP PIS PIS C PR OFF ON1 NP SW STOP PR OFF SW
SW IS8 (P 2) C R PR SW (30) C R SW STOP
(P 27) C R PIS Ab 28 AID (28) C R PIS Ab 29 Ab (29) C R PIS AID 30 AID (30) C R PIS PIS C R

FLEXOWRITER CONTROL TAPE NO. 4:

CATALOG CARD COMPUTER DATA TAPES PRODUCED.

(See Appendix _37_ for a description of its use)

CONTROL TAPE NO. 4

NOTES INPUT FORM

DATA TAPE IN FLEXO - AND PROGRAM TAPE FOR COMPUTER AND CAT. CARD BY PRODUCTS IN STRAD

OUT 1: CAT CD data tape
OUT 2: COMPUTER INPUT tape

IN 1: Correct Doc. Data Tape from CONTROL TAPES 1 and/or 2.
IN 2: CONTROL TAPE 4.

IN Flex Carriage Input Form II

In 1 SW (1): SW (2) SW (3) SW

A

In 2 OFF CR STOP CR TAB TAB ON2 NP AID AID 1 AID OFF ON1 NP 358 PR ON2 SW OFF ON2 NP PI5 AID 2 AID OFF ON1 NP SW PR ON2 SW OFF ON2 NP PI5 AID 3 AID PR OFF ON1 NP SW 368 PR ON2 SW OFF CR UC ON2 NP PI5

V L L

Out 1 358 (1): SW (2) SW 368 (3)

Out 2 AID AID 1 AID : (1): PI5 AID 2 AID (2) PI5 AID 3 AID (3) PI5

:

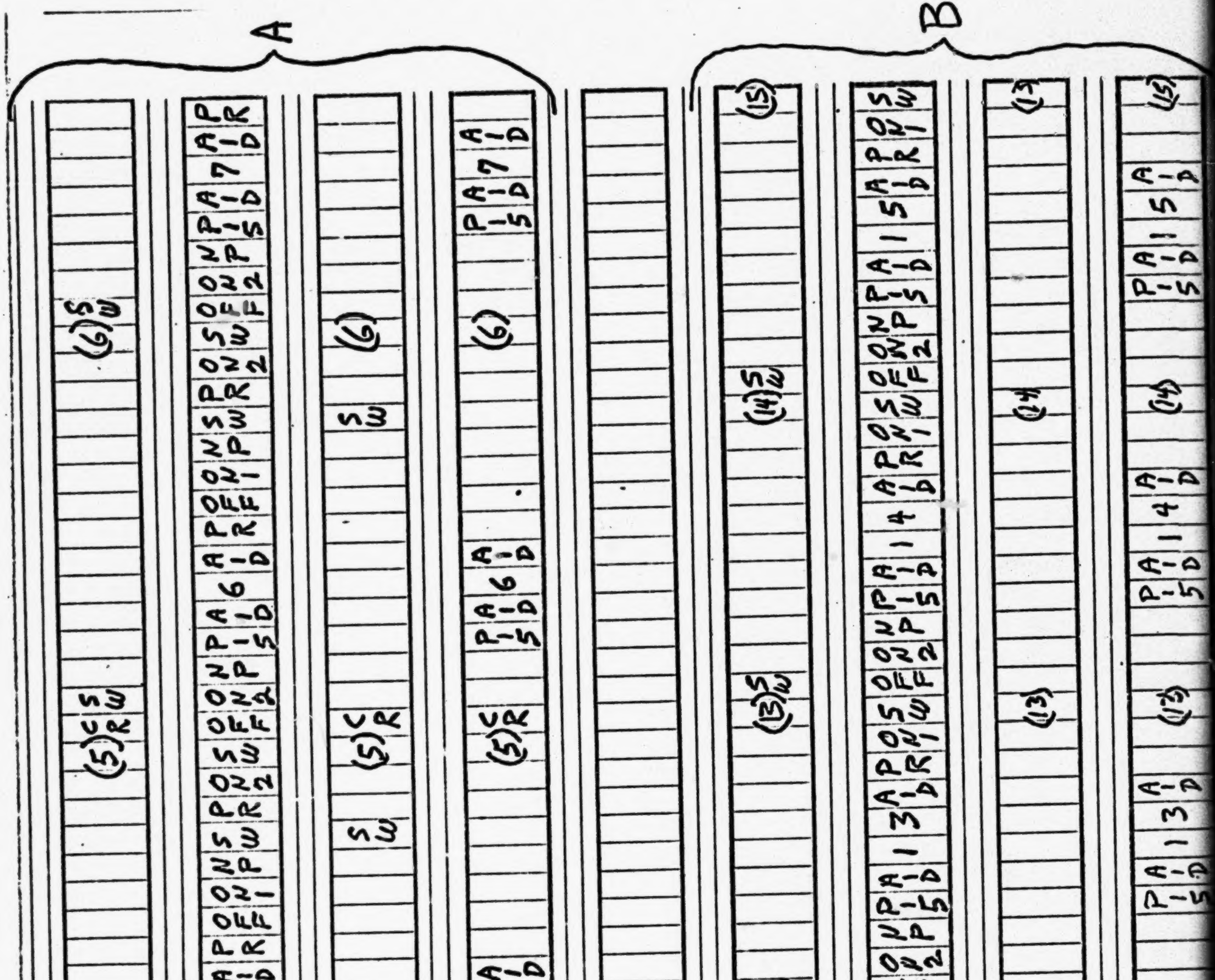
A

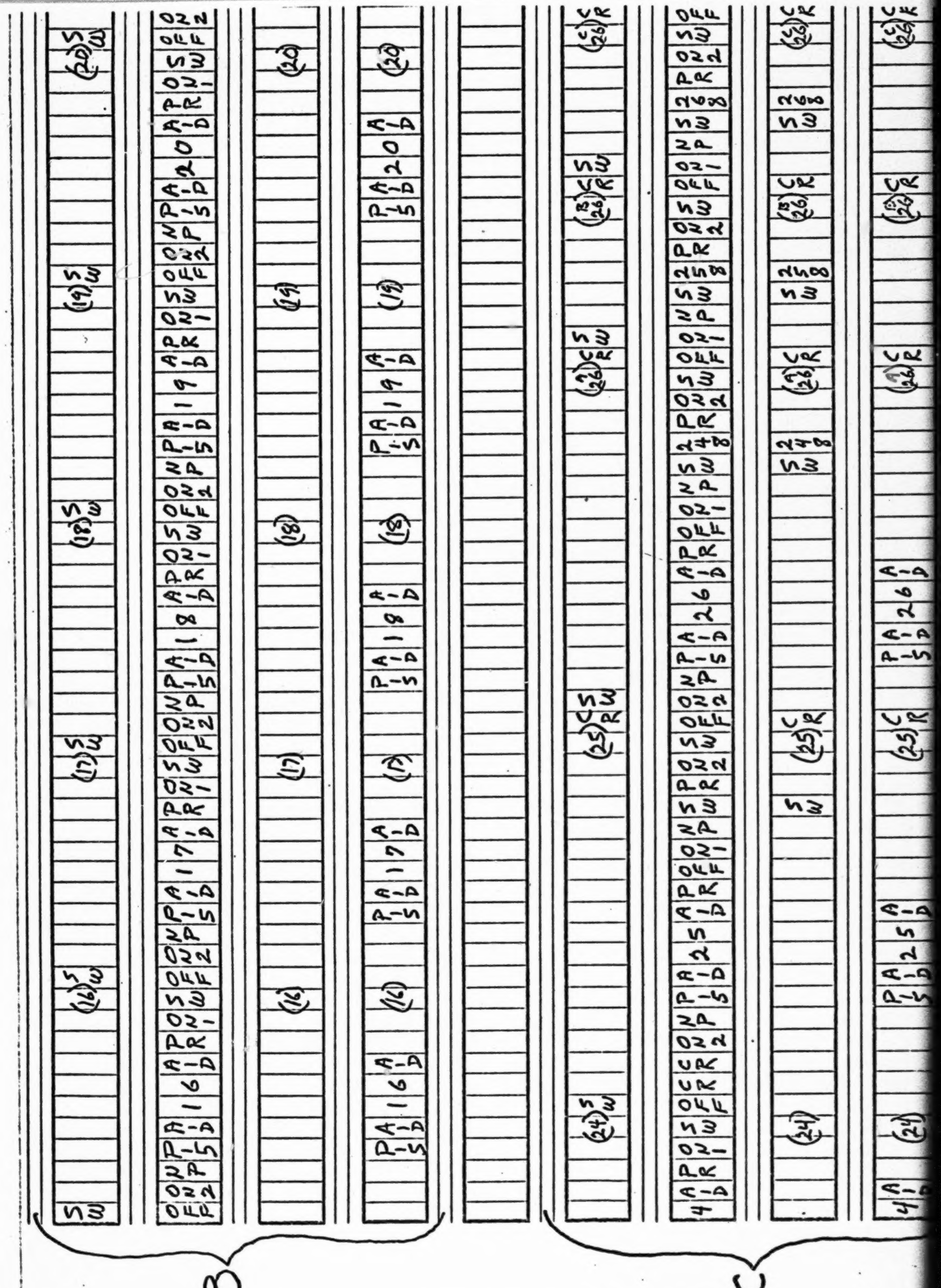
(7) J. T. AUTH. SW (8) ed. SW (9) SP SPONSOR SW (10) SW

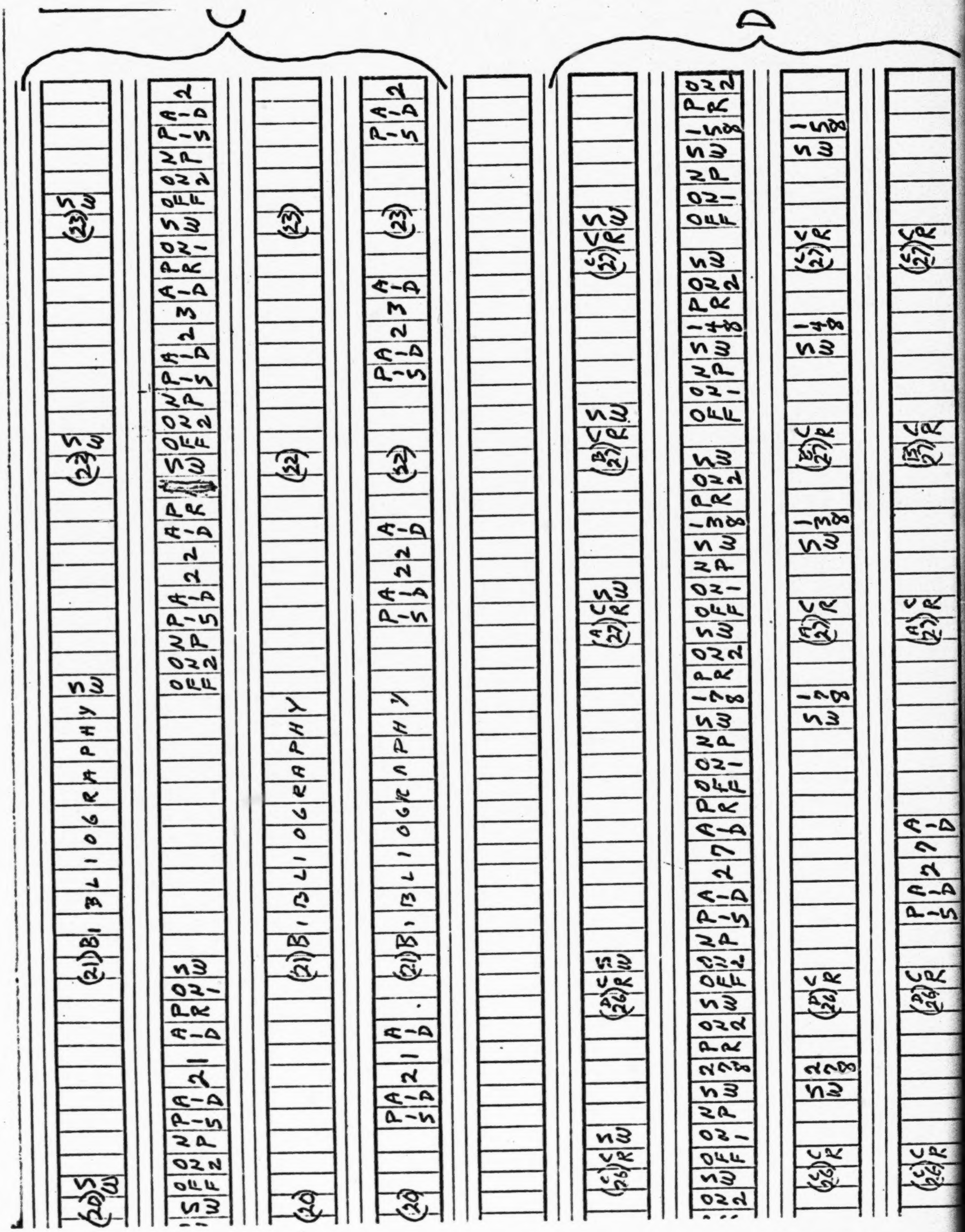
OFF ON1 SW OFF ON2 NP PI5 AID 8 AID PR ON1 SW OFF ON2 NP PI5 AID 9 AID PR ON1 SW OFF ON2 NP PI5 AID 1 0 AID PR ON1 SW OFF ON2 NP PI5 AID 1

(7) J. T. AUTH. (8) ed. (9) SP SPONSOR (10)

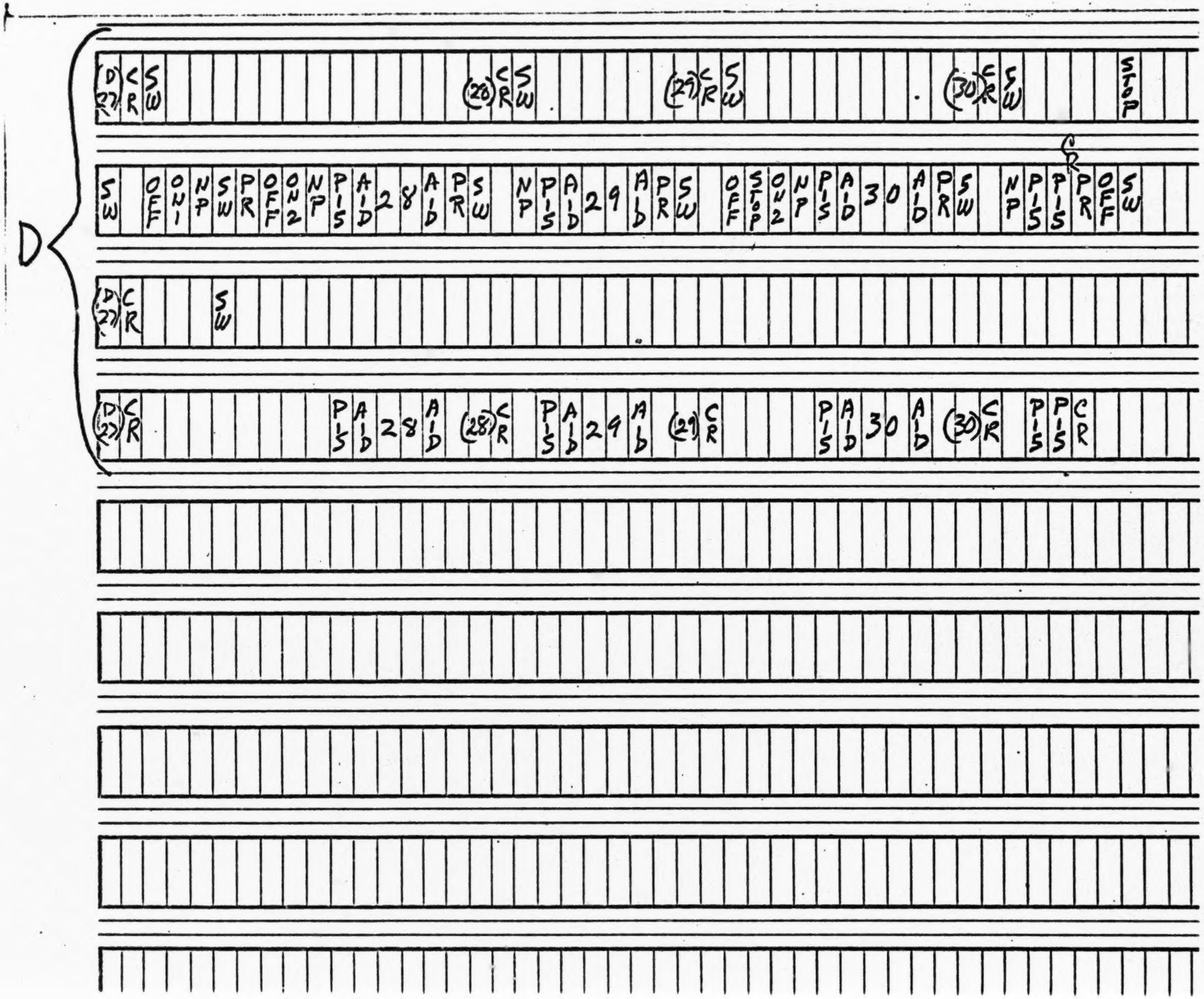
(7) J. T. AUTH. PI5 AID 8 AID (8) ed. PI5 AID (9) SP SPONSOR PI5 AID 1 0 AID (10) - PI5 AID 1


A
B
(4) C S R W
(5) C S R W
(6) S W
(4) C R
(5) C R
(6)
(11) S W
(12) S W
(13) S W
(14) S W
(15)
(11)
(12)
(13)
(14)
(15)


B
C
(16)
(17)
(18)
(19)
(20)
(24)
(25)
(26)
S W
P A 1 6 A
P A 1 7 A
P A 1 8 A
P A 1 9 A
P A 2 0 A
4 A
P A 2 5 A
P A 2 6 A



(20)
(21) BIBLIOGRAPHY
(22)
(23)
(26)
(27)


D
(D 27) C R S W
(28) C R S W
(29) C R S W
(30) C R S W
STOP
SW
OFF
ON 1
NP
SW
PR
OFF
ON 2
NP
P-S
A-D
2 8
A-D
PR
SW
NP
P-S
A-D
2 9
A-D
PR
SW
OFF
STOP
ON 2
NP
P-S
A-D
3 0
A-D
PR
SW
NP
P-S
P-S
CR
PR
OFF
SW
(D 27) CR
SW
(D 27) CR
P-S
A-D
2 8
A-D
(28) CR
P-S
A-D
2 9
A-D
(29) CR
P-S
A-D
3 0
A-D
(30) CR
P-S
P-S
CR

FLEXOWRITER CONTROL TAPE NO. 5:

CONTINUING EDUCATION ABSTRACTS FORMAT CONTROL.

(See Appendix 37 for a description of its use)

DATA

In1 OFF AID 358 SW (1): SW (2)SW (3)SW (4)CR SW (5)CR SW (6) (7)J. T. AUTH. (8)ed. (9)SP SPONSOR

PROGRAM

In2 358 STOP [illegible] LON1 NP 358 PR SW NP SW PR SW NP SW 3 PR SW NP SETWKR SW NP SW PR SW NP SW PR SW proof [illegible]

CAT. CARD OUTPUT

Out1 358 (1): SW (2) SW (3) SW 3 (4)CR SW (5)CR SW (6) (7)J. T. AUTH. (8)ed. (9)SP SPONSOR

A

CR SW 248 (A 26) CR SW 258 (B 26) CR SW 268 (C 26) CR SW 278 (D 26) CR SW 178 (A 27) CR SW 18 (B 27) CR SW 148 (C 27) CR SW 158 (D 27) CR PR SW (30) CR SW STOP

NP SW PR OFF CR SW CR CR SW

CR SW 248 (A 26) CR SW 258 (B 26) CR SW 268 (C 26) CR SW 278 (D 26) CR SW 178 (A 27) CR SW 138 (B 27) CR SW 48 (C 27) CR SW 158 (D 27) CR SW

D R (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) B I B L I O G R A P H Y (22) SW (23) SW (24) SW NP (25)

OFF SW OWI SW NP SW PR OFF CR ~~[illegible]~~ ONI SW

D R (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) B I B L I O G R A P H ~~(22)~~ (23) (24) SW (25)

A

CATALOG CARD CONTROL CARDS (EDGE-PUNCHED):

Shelf list, Main entry, Added entry and Subject heading 3x5 Cards produced on continuous stock.

(See Appendix 37 for a description of its use)

CONTROL CARDS (Cat A, B, C, D)

NOTES CAT. CARD PROGRAM

SH	26A	248	ADDED ENT.	27A	178
	26B	258		27B	138
	26C	268		27C	148
	27d	278		28D	158

(see * below)

A= Shelf List card CONT. CARD
B= MAIN ENTRY " " "
C= ADDED ENTRY " " "
D= SUBJECT HEADING " " "

~~[illegible]~~

~~MAIN ENTRY~~ PROG. TAPE

IN1 OFF AID 358 CR TAB SW SW SW [illegible] CR SW SW [illegible] SW [illegible] CR SW SW SW

CAT. CARD DATA TAPE – LOOPED FOR ADDRESS SEARCHING

IN2 358 (1): SW (2) SW (3) SW 36& (4) CR SW (5) CR SW (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) SW (25) CR SW 248 (24) CR SW 258 (26)

//

~~SHELF~~ CARD PROG. TAPE
MAIN ENTRY

IN1 OFF AID 358 CR TAB SW SW SW [illegible] CR SW SW SW CR SW STOP

OR

Add'l Entry (FIELD 27)

27A

IN1 OFF AID 358 CR TAB SW SW SW AID 178 CSS RW AID 36Z SW SW SW SW CR SW STOP TF TF OFF AID 358 CR TAB TAB SW SW SW AID 258 CR 2SP SW AID 368 SW SW SSC WWR SW STOP TF TF OFF AID 358 CR TAB TAB

26B

OR

SUBJECT HEADINGS (Field 26)

IN1 OFF AID CR TAB SW SW SW AID 248

	SW				SW				SW				SW				SW				SW				SW		STOP
SW	2 5 26	(E 26)	CR	SW	2 6 8	(C 24)	CR	SW	2 7 8	(D 26)	CR	SW	1 7 8	(A 27)	CR	SW	1 3 8	(E 27)	CR	SW	1 4 8	(C 27)	CR	SW	1 5 8	(D 27)	CR
SW																											

26C

CR	TAB	TAB	SW	SW	SW	AID	268	CR	2SP	SW	AID	368	SW	SW	SW	SW	CR	SW	STOP	TF	TF

LIBRARY OF CONTINUING EDUCATION
COMPUTER TEXT ORIENTED DATA FILE

The effort of the Syracuse University Research Corporation (SURC) to automate the L.C.E. file system has produced the following three (3) programs.

(1) PTRT- A program to read the flexowriter produced paper tapes of each document entered in the file. The control characters necessary for the flexowriter are screened off the tape, along with upper or lower case indicators. A document of fixed field length (and number) containing only the data is then produced in BCD (IBM compatible) on a magnetic tape density of 800 characters per inch. This program then creates a magnetic tape file representation of the paper tape file now used by L.C.E.

(2) FormA - This program will produce a copy of a number of fields from each document in the mag tape file - according to a specified format which may vary according to control cards. Word breaks at the end of lines, as well as hyphenation is taken into account. A control character is also sensed to indicate the beginning of another paragraph.

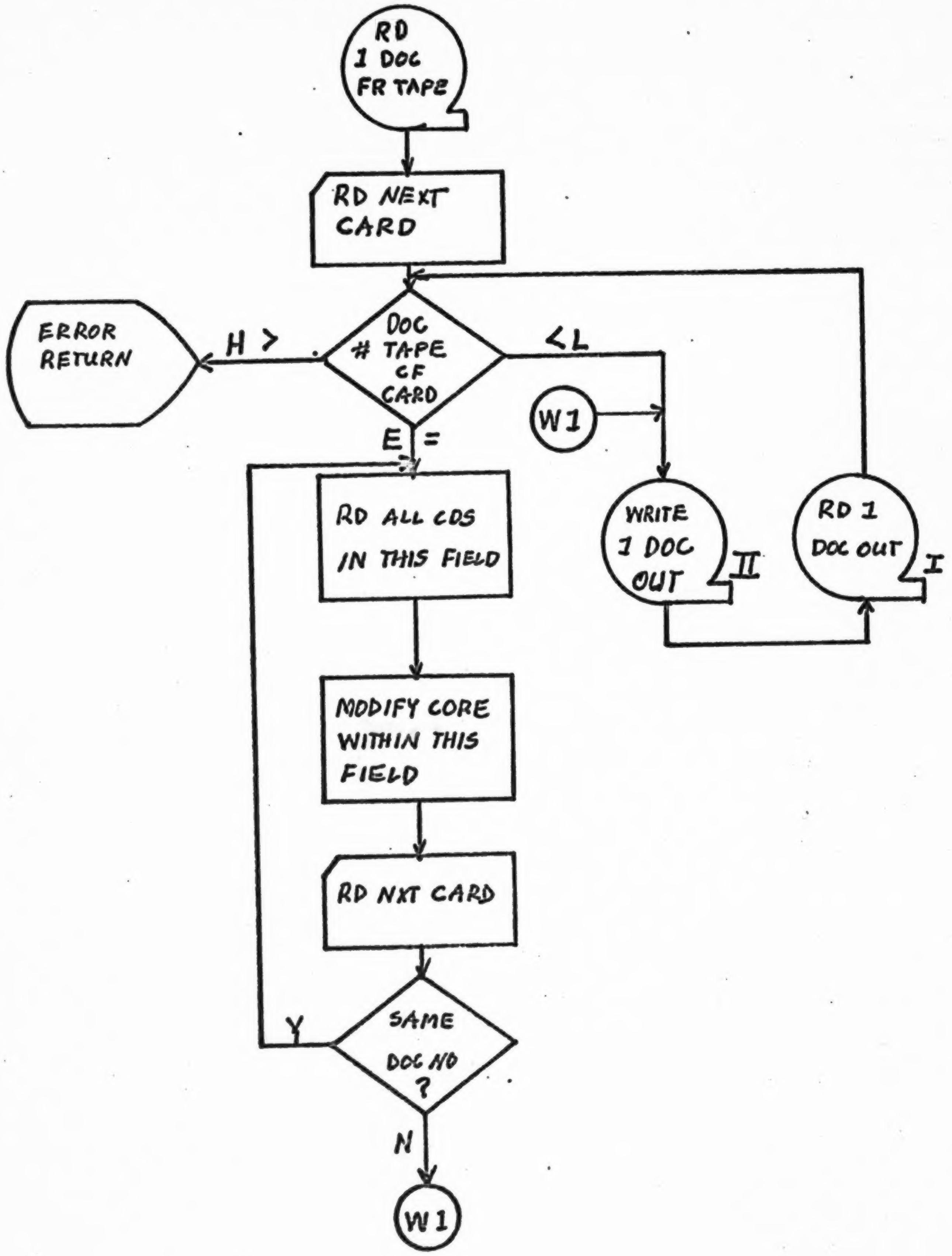
(3) Update - This program is necessary to replace one or more fields in the document tape file. Data cards, each containing the document and field number are read, and the corresponding document is pulled into core from the mag tape file. The entire field must be replaced. Any number of fields per document can be replaced, and a new document file tape with the updated document is produced.

PROGRAM TO REPLACE 1 OR MORE FIELDS ON DOCUMENT TEXT TAPE

CARD COLUMNS:

1-7	DOC NO
8-9	FIELD NO
10-11	NO OF CHAR
13-18	NEW FIELD DATA

UPPDATE FLOW CHART


RD 1 DOC FR TAPE
RD NEXT CARD
ERROR RETURN
H >
DOC # TAPE CF CARD
< L
E =
W1
RD ALL CDS IN THIS FIELD
WRITE 1 DOC OUT
II
RD 1 DOC OUT
I
MODIFY CORE WITHIN THIS FIELD
RD NXT CARD
Y
SAME DOC NO ?
N
W1

FORMAT "A" ROUTINE

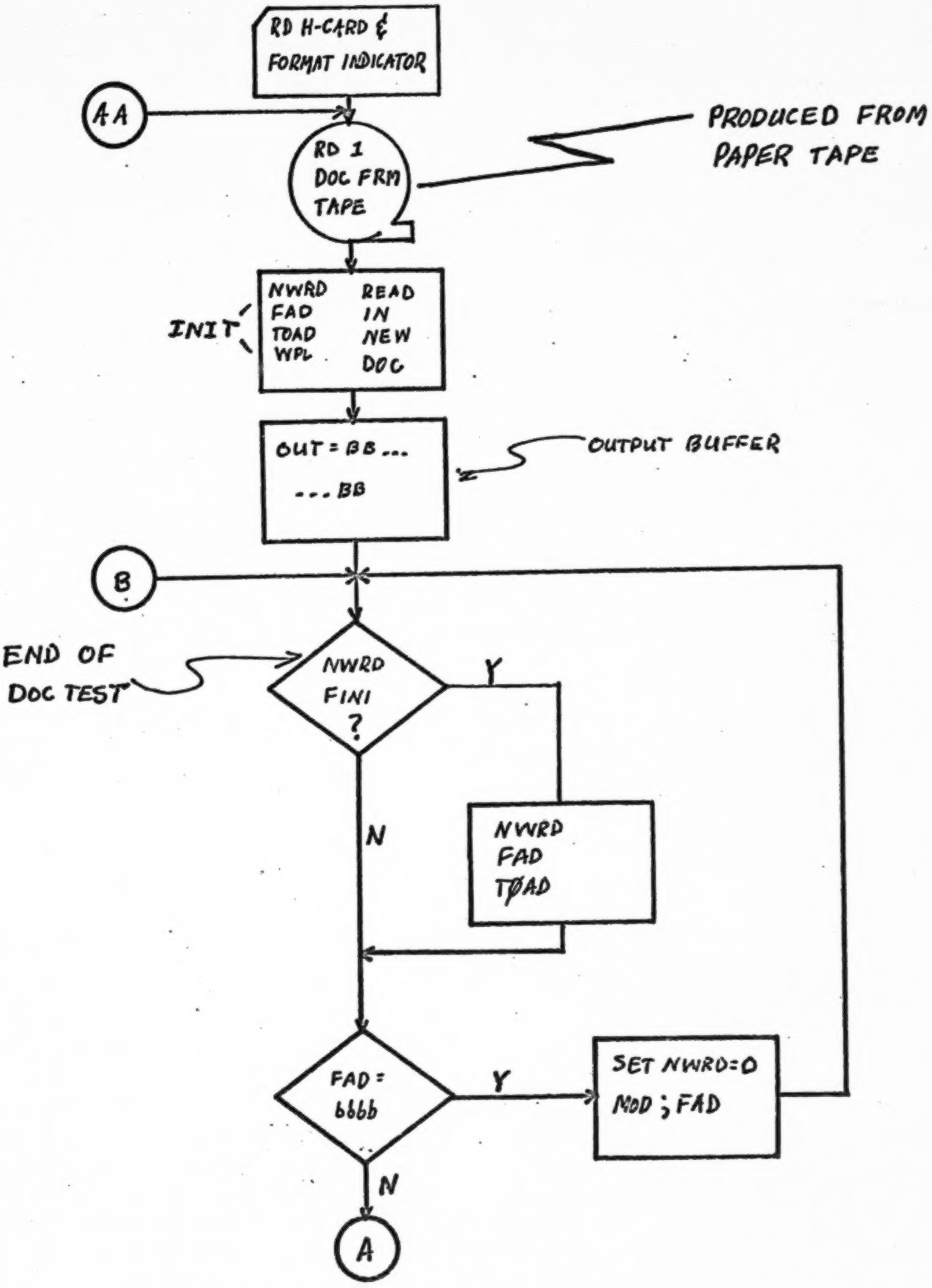
DEFINITIONS:

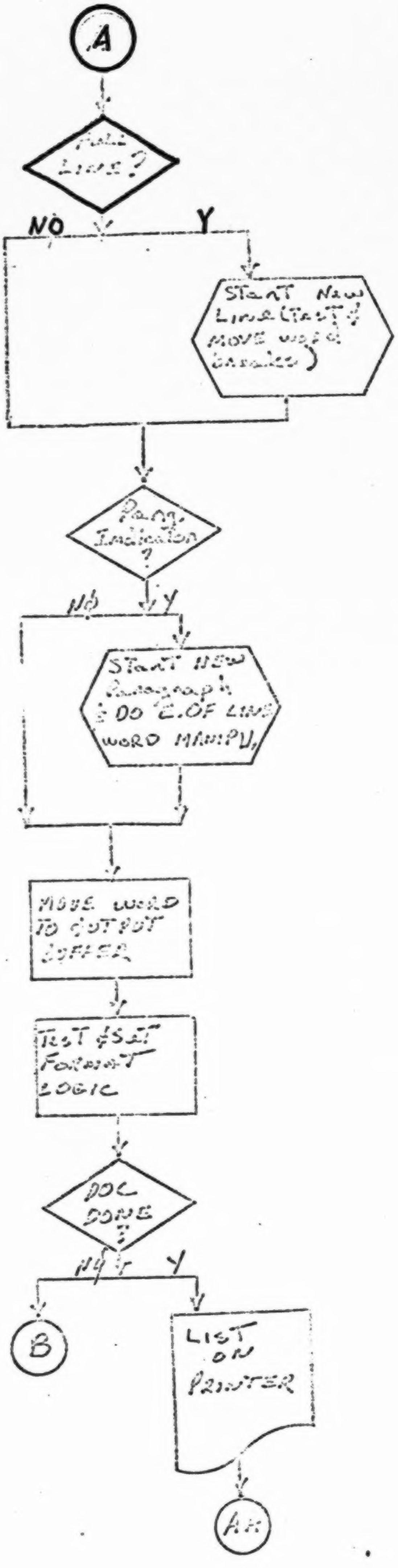
NWRD = # OF WORDS IN THIS FIELD
WPL = WORD/LINE COUNTER
FAD = FROM ADDRESS
TØAD = TO ADDRESS

DATA:

1, 2, 3 ... N
FIELD 23, FILD 24, ...

ØUT B, ØUT B+1, OUTB+N

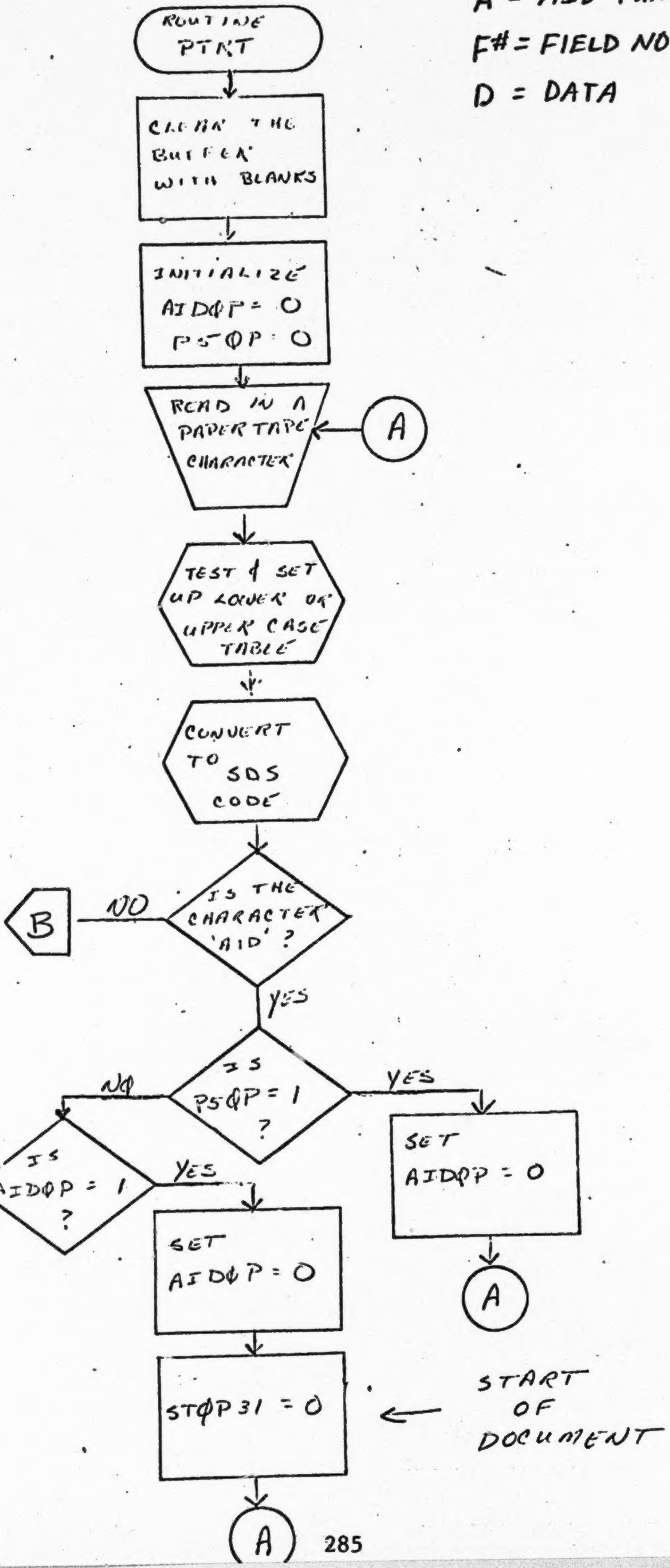

RD H-CARD & FORMAT INDICATOR
AA
RD 1 DOC FRM TAPE
PRODUCED FROM PAPER TAPE
INIT
NWRD FAD TOAD WPL
READ IN NEW DOC
OUT = BB ... ... BB
OUTPUT BUFFER
B
END OF DOC TEST
NWRD FINI ?
Y
N
NWRD FAD TØAD
FAD = bbbb
Y
SET NWRD=0 MOD ; FAD
N
A

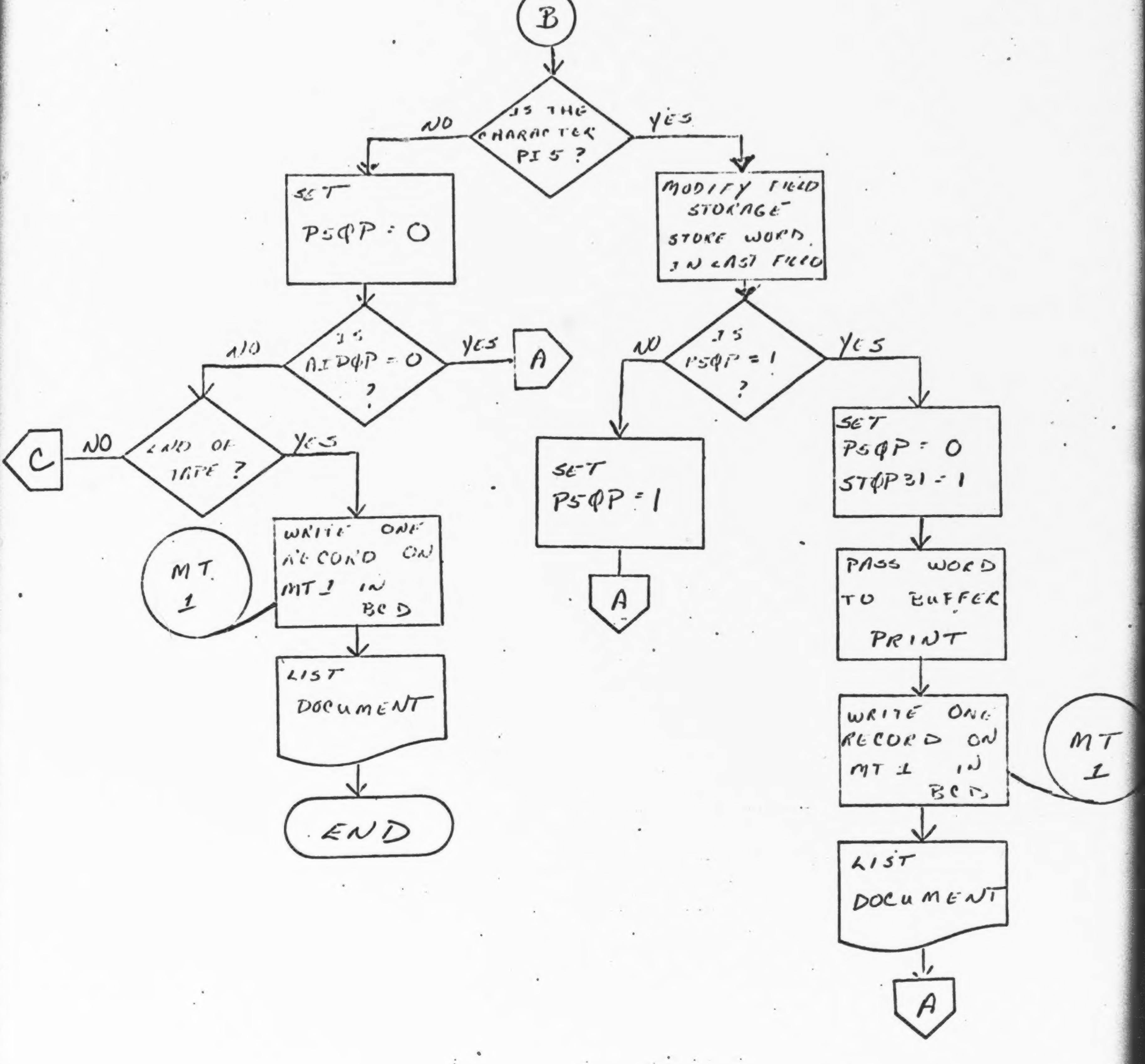

A
Full Line?
NO
Y
START NEW LINE (TEST & MOVE word breaks)
Parag. Indication ?
NO
Y
START NEW Paragraph & DO E. OF LINE WORD MANIPU.
MOVE WORD TO OUTPUT BUFFER
TEST & SET FORMAT LOGIC
DOC DONE ?
NO
Y
B
LIST ON PRINTER
AH

PAPER TAPE FORMAT

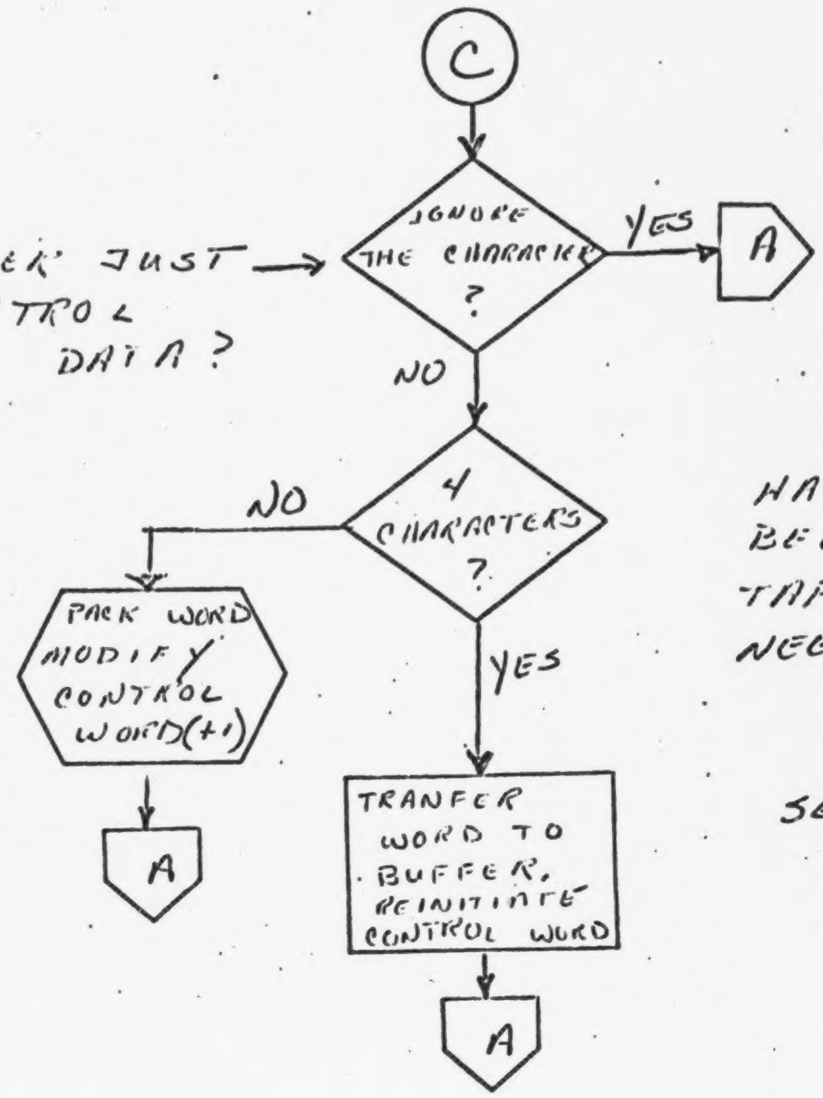
A, A, F#, A, D, PI5, A, F#, A, D, PI5, PI5

A = AID PUNCH
F# = FIELD NO
D = DATA


ROUTINE PTRT
CLEAR THE BUFFER WITH BLANKS
INITIALIZE AIDΦP = 0 P5ΦP = 0
READ IN A PAPER TAPE CHARACTER
A
TEST & SET UP LOWER OR UPPER CASE TABLE
CONVERT TO SDS CODE
IS THE CHARACTER 'AID' ?
NO
B
YES
IS P5ΦP = 1 ?
NO
YES
SET AIDΦP = 0
A
IS AIDΦP = 1 ?
NO
YES
SET AIDΦP = 1
A
SET AIDΦP = 0
STΦP31 = 0
START OF DOCUMENT
A


B
IS THE CHARACTER PI 5 ?
NO
YES
SET P5ΦP = 0
MODIFY FIELD STORAGE STORE WORD IN LAST FIELD
IS AIDΦP = 0 ?
NO
YES
A
IS P5ΦP = 1 ?
NO
YES
END OF TAPE ?
NO
YES
C
SET P5ΦP = 1
SET P5ΦP = 0 STΦP31 = 1
A
WRITE ONE RECORD ON MT 1 IN BCD
MT 1
PASS WORD TO BUFFER PRINT
LIST DOCUMENT
WRITE ONE RECORD ON MT 1 IN BCD
MT 1
END
LIST DOCUMENT
A

IS THE CHARACTER JUST READ FOR CONTROL PURPOSES OR DATA?


C
IGNORE THE CHARACTER ?
YES
A
NO
4 CHARACTERS ?
NO
PACK WORD MODIFY CONTROL WORD(+1)
A
YES
TRANFER WORD TO BUFFER, REINITIATE CONTROL WORD
A

HAVE 4 CHARACTERS BEEN READ FROM TAPE, THE NUMBER NEEDED TO FILL A WORD

SET AID0P = 0
PS0P = 0

```
ΔASSIGN LCR=CR,LLP=LP,L1=MT1,L2=MT2,L3=MT3,L4=MT4,L5=MT5,L6=MT6,L7=MT7
ΔREWIND 1.
ΔREWIND 2.
ΔASSIGN BI=MT4.
ΔLOAD 0,TSTP.
QLPB          40037764
QCPB          40037763
QCRB          40037762
QL7B          40037761
QL6B          40037760
QL5B          40037757
QL4B          40037756
QL3B          40037755
QL2B          40037754
QL1B          40037753
QL0B          40037752
QSYSP         40037775
QBINI         40037774
QSYMO         40037773
QBINO         40037772
QSYST         40037771
QSYMI         40037770
QSYS          40037767
QSYSI         40037765
QSYSU         40037776
QPESW         40037777
QSYLDR        40035410
QBOOT         40037736
QDUMP         40037637
QETBL         40036452
QMSG          40037766
QSRCH         40037075
QCW           40037237
QTAPE         40036734
QPAPER        40036713
QCARD         40036670
QSYSIN        40037234
QSYSTP        40037235
B\I3          40010052
B\I6          40010227
PRINT         40005470
B\S2          40007457
B\S18         40007570
B\S12         40007526
B\S23         40006757
MTAPE         40005744
B\T12         40007705
B\T11         40007704
B\C6          40007641
B\T2          40007673
B\BS23        40007341
B\T8          40007701
B\T3          40007674
```

PROGRAM LISTING:

PAPER TAPE TO
MAG TAPE
CONVERSION

(SDS "METASYMBOL")

```
B\T7           40007700
REG1E          40007124
REG2E          40007142
B\T4           40007675
B\T5           40007676
REG3M          40007160
B\T9           40007702
B\S24          40007377
REG1           40007106
REG2           40007124
REG3           40007142
B\REG2         40007124
REG2F          40007127
REG3E          40007176
REG3N          40007177
B\S25          40007273
B\T6           40007677
B\T10          40007703
B\OFLG         40007633
B\T1           40007672
B\037          40007660
B\INC93H       40007657
B\C5           40007640
B\HIBYTE       40007655
B\NEGZRO       40007647
B\S15          40007535
B\S17          40007551
B\C12          40007666
B\C13          40007672
B\NEG1         40007652
B\SFLG         40007631
B\TFLG         40007632
B\DIR          40007634
B\BINS         40007635
B\CP           40007636
B\C4           40007637
B\C7           40007642
B\C8           40007643
B\C9           40007644
B\C10          40007645
B\C11          40007646
B\ZERO         40007650
B\SIX          40007651
B\NEG2         40007653
B\NEG3         40007654
B\LOBYTE       40007656
B\ONE          40007661
B\T13          40007706
B\T14          40007707
B\I1           40007735
B\I2           40010020
B\I4           40010112
B\I5           40010147
B\I7           40010431
```

```
B\I8          40010511
B\I9          40010551
B\I10         40010340
B\I11         40010270
B\I21         40007710
B\I22         40007711
B\I23         40007712
B\I24         40007713
B\I25         40007714
B\I26         40007715
B\I27         40007716
B\I28         40007717
  BUFFER HAS BEEN CLEARED
  PAPER TAPE HAS BEEN READ
  MAG TAPE WRITE OUT ATTEMPTED
0001G8¡3     38
UCINDA.
       FINDINGS FROM RESEARCH ON MEETINGS.
```

UPDATE
PROGRAM
SDS 930
"METASYMBOL"
LANGUAGE

```
ΔASSIGN X1=MT1W,S=MT0W,SI=CR1W,BO=MT2W,LO=LP1W.
ΔASSIGN LCR=CR,LLP=LP,L0=MT0,L1=MT1,L2=MT2,L3=MT3.
ΔREWIND 1.
ΔREWIND 2.
ΔMETAB920 SI,BO,LO,SET.
                                      1           EXTEND
                                      2           INHS
      00310                           3           RORG      200
                                      4 CRDIN     DA        20
                                      5 DOCIN     FIELD     CRDIN,1,7
                                      6 FLDIN     FIELD     CRDIN,8,2
                                      7 CNOIN     FIELD     CRDIN,10,2
                                      8 CDATA     FIELD     CRDIN,13,68
      00334                           9 TAPIN     RES       2000
                                     10 DOCTAP    FIELD     TAPIN+382,2,7
      04254                          11 BUFF      RES       1000
                                     12 CON       DA        10
                                     13 CDOCIN    FIELD     CON,1,7
                                     14 CFLDIN    FIELD     CON,8,2
                                     15 CCNOIN    FIELD     CON,10,2
      06236                          16 PRNT      RES       33
                                     17 DOCPT     FIELD     PRNT,2,7
                                     18 FLDPT     FIELD     PRNT,10,2
                                     19 MESS      FIELD     PRNT,20,40
*     06277  0 43 0 00000            20 JACK      TYPE      TYP
      06300  0 00 07005
      06301  0 00 0 00000            21           HLT
      06302  0 43 0 06430            22 BEGIN     BRM       RDTAP
      06303  0 76 0 07023            23 START     BLANK     BUFF,1000
      06304  0 71 0 07024
      06305  2 35 0 06224
      06306  0 41 0 06305
      06307  0 43 0 06514            24           BRM       RDC
*     06310  0 43 0 00000            25 MVE       MOVE      DOCIN,CDOCIN
      06311  000 000 006
      06312  0 00 0 00310
      06313  0 00 0 06224
*     06314  0 43 0 00000
*     06315  0 43 0 06310            26 MVE1      MOVE      FLDIN,CFLDIN
      06316  001 001 001
      06317  0 03 0 00310
      06320  0 03 0 06224
*     06321  0 43 0 06314
*     06322  0 43 0 06315            27           MOVE      CNOIN,CCNOIN
      06323  002 002 001
      06324  0 01 0 00310
      06325  0 01 0 06224
*     06326  0 43 0 06321
*     06327  0 43 0 06322            28 COMP      COMPARE   DOCIN,DOCTAP
      06330  000 000 006
      06331  0 00 0 00310
      06332  0 01 0 01132
*     06333  0 43 0 00000
*     06334  0 53 0 00000            29           BL        COPYT
```

```
  06335  0 01 0 06337
  06336  0 01 0 06455
  06337  0 76 0 07025         30         BE       EQ1
* 06340  0 72 0 06334
  06341  0 01 0 06343
  06342  0 01 0 06345
  06343  0 43 0 06404         31         BRM      BDUPDC
  06344  0 01 0 06303         32         BRU      START
  06345  0 71 0 07026         33 EQ1     MOVEWD   CRDIN+3,BUFF,17
  06346  2 76 0 00334
  06347  2 35 0 04275
  06350  0 41 0 06346
  06351  0 76 0 07027         34         LDA      =17
  06352  0 35 0 06756         35         STA      SAVE
  06353  0 43 0 06514         36 LOOP    BRM      RDC
* 06354  0 43 0 06327         37         COMPARE  DOCIN,CDOCIN
  06355  000 000 006
  06356  0 00 0 00310
  06357  0 00 0 06224
* 06360  0 43 0 06333
  06361  0 76 0 07025         38         BU       DOCBRK
* 06362  0 72 0 06340
  06363  0 01 0 06474
* 06364  0 43 0 06354         39         COMPARE  FLDIN,CFLDIN
  06365  001 001 001
  06366  0 03 0 00310
  06367  0 03 0 06224
* 06370  0 43 0 06360
  06371  0 76 0 07025         40         BU       FLDBRK
* 06372  0 72 0 06362
  06373  0 01 0 06506
  06374  0 71 0 06756         41         LDX      SAVE
* 06375  0 43 0 00000         42         MOVEWD   CRDIN+3,(BUFF),17
  06376  0 00 00313
  06377  2 00 04254
  06400  0 00 00021
  06401  0 76 0 07027         43         LDA      =17
  06402  0 63 0 06756         44         ADM      SAVE
  06403  0 01 0 06353         45         BRU      LOOP
  06404  0 00 00000           46 BDUPDC  PZE      0
  06405  0 76 0 07023         47         BLANK    PRNT,33
  06406  0 71 0 07030
  06407  2 35 0 06277
  06410  0 41 0 06407
* 06411  0 43 0 06364         48         MOVE     DOCIN,DOCPT
  06412  000 000 006
  06413  0 00 0 00310
  06414  0 01 0 06236
* 06415  0 43 0 06326
* 06416  0 43 0 06411         49         MOVE     MESS1,1,39,MESS
  06417  000 004 046
  06420  0 00 0 06757
  06421  0 03 0 06236
* 06422  0 43 0 06415
* 06423  0 43 0 00000         50         PRINT    PRNT
```

```
   06424  0 05 0 06236
   06425  0 76 0 07031     51        LDA      =0
   06426  0 35 0 06756     52        STA      SAVE
   06427  0 51 0 06404     53        BRR      BDUPDC
   06430  0 00 00000       54 RDTAP  PZE      0
*  06431  0 43 0 00000     55        READTP   1,TAPIN,8000
   06432  0 01 0 00334
   06433  0 00 0 03720
*  06434  0 60 0 00000     56        BTMK     TEØF
   06435  0 01 0 06441
*  06436  0 60 0 00000     57        BCER     TERR
   06437  0 01 0 06453
   06440  0 51 0 06430     58 BAC    BRR      RDTAP
*  06441  0 43 0 00000     59 TEØF   WTMARK   2
   06442  0 02 0 00000
*  06443  0 43 0 00000     60        REWIND   2
   06444  0 02 0 00000
*  06445  0 43 0 06443     61        REWIND   1
   06446  0 01 0 00000
*  06447  0 43 0 00000     62        BRM      QDUMP
   06450  0 00 06277       63        PZE      JACK
   06451  0 00 07043       64        PZE      TYP+30
   06452  0 01 0 00001     65        BRU      01
   06453  0 00 0 00000     66 TERR   HLT
   06454  0 01 0 00001     67        BRU      01
*  06455  0 43 0 00000     68 CØPYT  WRITETP  2,TAPIN,8000
   06456  0 02 0 00334
   06457  0 00 0 03720
*  06460  0 60 0 06436     69        BCER     CØPYT
   06461  0 01 0 06455
*  06462  0 60 0 00000     70        BETP     TEND
   06463  0 01 0 06466
   06464  0 43 0 06430     71        BRM      RDTAP
   06465  0 01 0 06327     72 BAC1   BRU      CØMP
*  06466  0 43 0 06441     73 TEND   WTMARK   2
   06467  0 02 0 00000
*  06470  0 43 0 06445     74        REWIND   2
   06471  0 02 0 00000
   06472  0 00 0 00000     75        HLT
   06473  0 01 0 06327     76        BRU      CØMP
   06474  0 43 0 06531     77 DØCBRK BRM      MVFLD
*  06475  0 43 0 06455     78        WRITETP  2,TAPIN,8000
   06476  0 02 0 00334
   06477  0 00 0 03720
   06500  0 76 0 07023     79        BLANK    BUFF,1000
   06501  0 71 0 07024
   06502  2 35 0 06224
   06503  0 41 0 06502
   06504  0 43 0 06430     80        BRM      RDTAP
   06505  0 01 0 06310     81        BRU      MVE
   06506  0 43 0 06531     82 FLDBRK BRM      MVFLD
   06507  0 76 0 07023     83        BLANK    BUFF,1000
   06510  0 71 0 07024
   06511  2 35 0 06224
   06512  0 41 0 06511
```

```
  06513  0 01 0 06315      84          BRU      MVE1
  06514  0 00 00000        85 RDC      PZE      0
* 06515  0 43 0 00000      86          READCD   CRDIN
  06516  0 00 00310
* 06517  0 60 0 00000      87          BLCD     CEOF
  06520  0 01 0 06522
  06521  0 51 0 06514      88 BAC2     BRR      RDC
  06522  0 60 0 06756      89 CEOF     SKR      SAVE
  06523  0 43 0 06531      90          BRM      MVFLD
* 06524  0 43 0 06475      91 WRST     WRITETP  2,TAPIN,8000
  06525  0 02 0 00334
  06526  0 00 0 03720
  06527  0 43 0 06430      92          BRM      RDTAP
  06530  0 01 0 06524      93          BRU      WRST
  06531  0 00 00000        94 MVFLD    PZE      0
  06532  0 71 0 07032      95          LDX      =-90
* 06533  0 43 0 06416      96 C1       COMPARE  CFLDIN,(TAB+90),3,2̄
  06534  001 000 001
  06535  0 03 0 06224
  06536  2 02 0 06756
* 06537  0 43 0 06370
  06540  0 76 0 07025      97          BE       GO1
* 06541  0 72 0 06372
  06542  0 01 0 06544
  06543  0 01 0 06577
  06544  0 41 0 06546      98          BRX      X1
  06545  0 01 0 06551      99          BRU      U30
  06546  0 41 0 06550     100 X1       BRX      X2
  06547  0 01 0 06551     101          BRU      U30
  06550  0 41 0 06533     102 X2       BRX      C1
  06551  0 76 0 07023     103 U30      BLANK    PRNT,33
  06552  0 71 0 07030
  06553  2 35 0 06277
  06554  0 41 0 06553
* 06555  0 43 0 06533     104          MOVE     CDOCIN,DOCPT
  06556  000 000 006
  06557  0 00 0 06224
  06560  0 01 0 06236
* 06561  0 43 0 06422
* 06562  0 43 0 06555     105          MOVE     CFLDIN,FLDPT
  06563  001 002 001
  06564  0 03 0 06224
  06565  0 01 0 06236
* 06566  0 43 0 06561
* 06567  0 43 0 06562     106          MOVE     MESS2,1̄,37,MESS
  06570  000 004 044
  06571  0 00 0 06771
  06572  0 03 0 06236
* 06573  0 43 0 06566
* 06574  0 43 0 06423     107          PRINT    PRNT
  06575  0 05 0 06236
  06576  0 51 0 06531     108 EXIT     BRR      MVFLD
  06577  0 37 0 07004     109 GO1      STX      SAV2
  06600  2 76 0 06757     110          MOVEWD   (TAB+91),X,1
  06601  0 35 0 07003
  06602  0 71 0 07004        111          LDX       SAV2
  06603  2 71 0 06760        112          LDX       TAB+92,2
  06604  0 37 0 07004        113          STX       SAV2
* 06605  0 43 0 06574        114          PRINT     (TAPIN)
  06606  2 05 0 00334
  06607  0 71 0 07004        115          LDX       SAV2
  06610  0 76 0 07003        116          MOVEWD    BUFF,(TAPIN),(X)
  06611  0 35 0 06615
* 06612  0 43 0 06375
  06613  0 00 04254
  06614  2 00 00334
  06615  0 00 00000
  06616  0 71 0 07004        117          LDX       SAV2
* 06617  0 43 0 06605        118          PRINT     (TAPIN)
  06620  2 05 0 00334
* 06621  0 43 0 00000        119          UPSPACE 2
  06622  0 11 0 00000
  06623  0 01 0 06576        120          BRU       EXIT
  06624  00000001            121 TAB      DATA      '1',2,1
  06625  00000002
  06626  00000001
  06627  00000002            122          DATA      '2',4,3
  06630  00000004
  06631  00000003
  06632  00000003            123          DATA      '3',24,7
  06633  00000030
  06634  00000007
  06635  00000004            124          DATA      '4',6,31
  06636  00000006
  06637  00000037
  06640  00000005            125          DATA      '5',30,37
  06641  00000036
  06642  00000045
  06643  00000006            126          DATA      '6',40,67
  06644  00000050
  06645  00000103
  06646  00000007            127          DATA      '7',24,107
  06647  00000030
  06650  00000153
  06651  00000010            128          DATA      '8',20,131
  06652  00000024
  06653  00000203
  06654  00000011            129          DATA      '9',30,151
  06655  00000036
  06656  00000227
  06657  00000100            130          DATA      '10',30,181
  06660  00000036
  06661  00000265
  06662  00000101            131          DATA      '11',9,211
  06663  00000011
  06664  00000323
  06665  00000102            132          DATA      '12',30,220
  06666  00000036
  06667  00000334
  06670  00000103            133          DATA      '13',2,250
```

```
06671   00000002
06672   00000372
06673   00000104        134          DATA     '14',2,252
06674   00000002
06675   00000374
06676   00000105        135          DATA     '15',9,254
06677   00000011
06700   00000376
06701   00000106        136          DATA     '16',10,263
06702   00000012
06703   00000407
06704   00000107        137          DATA     '17',8,273
06705   00000010
06706   00000421
06707   00000110        138          DATA     '18',7,281
06710   00000007
06711   00000431
06712   00000111        139          DATA     '19',40,288
06713   00000050
06714   00000440
06715   00000200        140          DATA.    '20',25,328
06716   00000031
06717   00000510
06720   00000201        141          DATA     '21',25,353
06721   00000031
06722   00000541
06723   00000202        142          DATA     '22',4,378
06724   00000004
06725   00000572
06726   00000203        143          DATA     '23',1,382
06727   00000001
06730   00000576
06731   00000204        144          DATA     '24',1,383
06732   00000001
06733   00000577
06734   00000205        145          DATA     '25',125,384
06735   00000175
06736   00000600
06737   00000206        146          DATA     '26',96,509
06740   00000140
06741   00000775
06742   00000207        147          DATA     '27',96,605
06743   00000140
06744   00001135
06745   00000210        148          DATA     '28',45,701
06746   00000055
06747   00001275
06750   00000211        149          DATA     '29',235,746
06751   00000353
06752   00001352
06753   00000300        150          DATA     '30',1000,981
06754   00001750
06755   00001725
06756   0 00 00000      151 SAVE     PZE      0
06757   64472421        152 MESS1    TEXT     <UPDATE DOCUMENT NUMB
```

```
06760  63256024
06761  46236444
06762  25456360
06763  45644422
06764  25516045
06765  46636046
06766  45606321
06767  47256026
06770  31432560
06771  31434325            153 MESS2   TEXT     <ILLEGAL FIELD NUMBE
06772  27214360
06773  26312543
06774  24604564
06775  44222551
06776  60464560
06777  64472421
07000  63256051
07001  25234651
07002  24606060
07003  0 00 00000          154 X       PZE      0
07004  0 00 00000          155 SAV2    PZE      0
07005  44466445            156 TYP     TEXT     <MOUNT TAPES SPECIFI
07006  63606321
07007  47256260
07010  62472523
07011  31263125
07012  24604645
07013  60633025
07014  60622563
07015  64476023
07016  21512460
07017  21452460
07020  23464563
07021  31456425
07022  52606060
       00006277            157             END      JACK
07023  60606060
07024  00176030
07025  77777777
07026  00177757
07027  00000021
07030  00177737
07031  00000000
07032  77777646
06515                          B\I3
06277                          B\I6
06567                          B\S18
06573                          B\S12
06537                          B\S11
06541                          B\SFLG
06612                          B\S1
06617                          B\I1
06524                          B\I11
06431                          B\I10
06517                          B\I23
```

```
06434                       B\I24
06462                       B\I26
06460                       B\I28
06466                       B\I8
06470                       B\I9
06447                       QDUMP
06621                       B\I2
```

```
       ADULT EDUCATION FOR LIBR. OF CONT.EDUCATION
           SIGNIFICANT DOCUMENTS  CONCERNING


 TC0032H1:585
BILASH, I.
    THE EFFECTS OF AGE ON FACTORIALLY PURE MENTAL
ABILITIES.   8P.    FIGURES. XEROX.      ENG.     FROM:
JOURNAL OF GERONTOLOGY,V.15,1960, PP.175-182.

    AGE-CHANGE  SEX  MENTAL-ABILITY  RESEARCH   ADULT
KING-FACTORED-APTITUDE-TEST  COMPREHENSION   VERBAL-SHILL
REASONING SPACE-RELATIONS   NUMERICAL-ABILITY  MEMORY
PERCEPTION  MOTOR- SKILL

    PURPOSE: TO STUDY THE RELATIONSHIP BETWEEN AGE AND
PERFORMANCE ON 8 INDEPENDENT MENTAL ABILITIES USING A
LARGE SAMPLE AND COVERING AN AGE RANGE OF 16 TO 89 YEARS.
METHOD: THE KING FACTORED APTITUDE TEST WAS ADMINISTERED
TO 634 SUBJECTS, REPRESENTING VARIOUS EDUCATIONAL,
OCCUPATIONAL AND ECONOMIC BACKGROUNDS.  THE TEST BATTERY
MEASURES 8 INDEPENDENT OR FACTORIALLY PURE ABILITIES;
COMPREHENSION, VERBAL FLUENCY, SPACE RELATIONS, NUMERICAL
ABILITY, MEMORY FOR NAMES AND FACES, REASONING, DEXTERITY,
AND PERCEPTION. FINDINGS: A COMPOSITE OF THE 8 MENTAL
ABILITIES SHOWED A PROGRESSIVE DECLINE FROM THE TEENS TO
THE 70'S.  COMPREHENSION, VERBAL FLUENCY, NUMERICAL, AND
SPATIAL ABILITIES DECLINED AFTER THE MID-FORTIES.
REASONING, MEMORY, PERCEPTION, AND DEXTERITY DID NOT HOLD
UP WITH AGE, BUT DECLINED GRADUALLY FROM THE TEENS TO THE
70'S. MALES SHOWED A SIGNIFICANTLY BETTER PERFORMANCE ON
COMPREHENSION, NUMERICAL ABILITY, AND SPATIAL ABILITY,
WHILE FEMALES WERE SIGNIFICANTLY BETTER ON MEMORY.  NO
SIGNIFICANT SEX  DIFFERENCES WERE FOUND FOR REASONING,
VERBAL FLUENCY, PERCEPTION, AND DEXTERITY.  39 REFS.
```

SAMPLE PRINTOUT
ON SDS930 COMPUTER
LINE PRINTER
(PROOF RUN)

APPENDIX 45

MEMO: T-RM-79B
(Refer to T-RM-54,
73, 79)

TO: Staff and Files
D. Shurtleff
C. Burton
J. Zwierzinski
R. Videbeck
R. Levesque

FROM: Ron Miller

July 27,1966

SUBJECT: Supplementary Programing Efforts

This memo discusses some areas for future computer programing effort by SURC personnel, utilizing a textual data-base produced in paper tape form by the Library of Continuing Education. These areas, as well as others suggested by them, may be useful to SURC and ERIC planning as well as to fulfilling the objectives of the LCE.

Since textual information on paper tape produced by LCE is now being transferred to magnetic tape via the SDS 930 computer, a wide range of analytical reports, search products, and output formats can be generated. Theoretically, the possibilities appear almost limitless. Practically, however, we must select strategies from those possibiliti which will produce highly usable products faster, cheaper, and with greater accuracy than can be produced by other methods.

For purposes of discussion, I have grouped these possibilities into three general areas to be elaborated further below:

I. Process Diagnosis: the manipulation, counting, listing and summarizing of textual data as it is being stored on magnetic tape. This information is useful to continuously revise files for document analysis, thesaurual indexing terms, and generally summarize the content of the file.

II. Searching: the matching of words in stored documents to query words to provide printed out references grouped by query.

III. Output formatting: the print-out, card or paper tape punching for the dissemination of stored document data.

I. PROCESS DIAGNOSIS

Since many steps within the input phase of the LCE system can be considered error/prone, we must be able to know without question that documents stored on mag tape are correct in every detail. In addition, we should know certain statistical information about file and document size in order to judge input rates, costs, and expanding storage requirements. The extensive counting and summarizing capabilities of the computer, as well as its arithmetic functions should be exploited as much as necessary or we are simply wasting valuable time and money which might be better applied to other areas of the system.

This diagnostic area can be sub-divided into three areas.

(A1-4) File Status
(B1-5) File Analysis
(C 1) Document Content Summary and Analysis

(A 1) FILE STATUS:

Reporting might include the following summaries as output:

(A 2) No. of docs in file ____________
No. of verbal (as opposed to computer) words in the file ____________
Max words occurring in longest document stored ____________
Min words occurring in shortest document stored ____________
Mean words per doc in file ____________

COMMENT: Knowing these summaries will provide a count of documents in the file and when compared with the similar summaries on say, a monthly basis, input rate can be determined. In addition, the range of document lengths, and the average length can be determined, and either enlarged or diminished at the point of document analysis as input time and costs exceed pre-set limits.

Further, if we also input dates relating to stages of document analysis prior to computer input, we could, by simple subtraction or calendar look-up, determine input lag times and modify this phase of the system accordingly.

At this point, we do this kind of analysis manually. Such a computer-produced summary might look like this:

(A 3) INPUT STEP	DATE RANGE		
(Mean date) Doc rec'd at LCE	04 06 66 (earliest)	09 12 66 (latest)	05 06 00 (range)

mean date = 040666 + $\frac{159}{2}$ days

= 040666 + 80 days

and similar computation could be made for: = 062466 = June 24, 1966

(Mean date) Doc keyed into Flexowriter: = 100566

(Mean date) Doc input into computer = 101166

The addition of these dates would give a "standard (or mean) document entry time" for each input batch. We would develop a highly accurate estimate of "turn around time", when similar techniques are applied to searching the documents in response to user queries.

There are some fallacies here, of course, since documents pulled from our existing collection for entry into the computer system may be several years old, but in these cases, the "Pulling date" would be equal to the "Doc rec'd at LCE" date. And calendar days may have to be equated into work days. The same kind of summary (see I.C. below) derived during the diagnostic print-out of each document would trace exceptions to the standard and counteract the misleading mean time to some extent. Or an average summary might be more helpful.

(A 4) In addition, the following data derived and summarized from counts of each document field would look like this:

TOTAL WORDS IN FIELD (of all docs in the file)		RANGE	QUANTITY EMPTY
Class No. Field 1	______	______	______
Access No. Field 2	______	______	______
↓	↓	↓	↓
Abstract Field 30	______	______	______

COMMENT: A print-out of the total number of words in the file is really unnecessary here, but might serve as a cross-check of (I.A.2.) above. The foreseeable purpose of this listing is to help to revise the format of document resume forms, and give us a continuing idea of what a "typical" document looks like. We might decide, for instance, to combine one seldom-used field with another and have substantial justification to tighten up field lengths, employing abbreviations and the like. Many of these data should prove very useful for designers of systems similar to our own.

(B 1) FILE ANALYSIS

As an example of what can be done to derive data about classes of documents, summaries such as illustrated below from field 17 (language) can be accomplished by relatively simple stripping-sort-merge techniques:

LANGUAGE	FREQUENCY
Eng.	________
Fre.	________
Ger.	________
Spa.	________
Ita.	________
Swe.	________
Dan.	________
Nor.	________
Eng. - Fr.	________
etc.	________
Total SCANDANAVIAN	________
Total AFRICAN	________
Total SLAVIC	________

COMMENT: Summaries such as this one, would alert us to appropriate publication times for special catalogs, bibliographies, and the like. The same kind of thing could be done with fields 26,27,28 for similar purposes.

(B 2) Concentrating further on fields 28 and 29 - (Index terms) much information can be derived which would prove useful in later SEARCHING and OUTPUT FORMATTING programing efforts. For instance, a parallel listing of terms from each field (we could include field 26 here too) might look like this.

Field 26	Frequ.	Field 28	Frequ.	Field 29	Frequ.
		Able-bodied	20		
		Abstr.-ideas	5		
		Academic standards	15		
Academic standards	10				
				Accuracy	4
		Television	6		
				Two-year college	11
↓ etc.		↓ etc.		↓ etc.	

or in another form, preserving the same data:

TERM	Field 26	Field 28	Field 29	Total
Able-bodied		20		20
Abstract-ideas		5		5
Academic standards	10	15		25
Accuracy			4	4
Television		6		6
Two-year college			11	11
			TOTAL	71

Much can be gained from this process:

a. Only terms actually used to index documents are listed.

b. We can merge or restrict term-usage by clearly defining the uses to which each field might be put.

c. We can begin classifying the scope of terms, perhaps assigning functional code classes to terms, instead of fields, and combine all index terms into one field, except for identifiers.

d. We can begin to revise the usefulness of parts of the thesaurus based on use instead of intuition.

e. We begin to build an inverted term file for searching purposes, perhaps tagging terms and their combinations to document numbers.

(B 3) OCCURANCE AND CO-OCCURANCE OF TERMS IN Fields 28 and 29. Would be listed as follows:

TERM	OCCURANCE	CO-OCCURANCE
ABLE-BODIED	20	
ABSTRACT-IDEAS		-
ACCURACY		1
TELEVISION		-
TWO-YEAR-COLLEGE		6
ABSTRACT-IDEAS	5	
ABLE-BODIED		-
ACCURACY		-
TELEVISION		3
TWO-YEAR-COLLEGE		-

The assumption being tested here is that if two terms co-occur often enough as index terms to similar documents, perhaps a third concept, or term, should be applied to that document, or suggested as a new thesaurus entry. Again, statistical evidence would suggest and support arguments for -- against -- such decisions. These decisions now are made somewhat intuitively.

COMMENT: This technique if valid and economical could be applied to field 28, and 29, and/or both fields combined. My initial hunch is to apply it to both simultaneously, treating them, in effect, as a single field. (See also note about thesaurus up-dating at the end of this memo.)

(C 1) DOCUMENT CONTENT AND SUMMARY ANALYSIS

This programing phase is little more than a labeled and formatted dump from mag tape storage.

It might look as follows:

FIELD NAME	NUMBER	DATA
Class Codes	1	BH6
Doc Number	2	0016
↓	↓	↓
Abstract	30	The bird is wending...

COMMENT: Each document is listed in the sequence stored; only fields with verbal alphameric data in them are included. The purpose for this print-out is quite obvious; it provides feedback to the LCE staff for updating document fields and serves as an input accuracy check when compared with Flexowriter input proofs. From this print-out, updated information can be initiated either via paper tape, cards, or computer console. A natural but operationally awkward use of the SDS 930's Cathode Ray Tube would presumably apply to this stage as well, even replacing hard copy print-out for proofing.

Such are some suggestions applying to PROCESS DIAGNOSIS.

II. SEARCHING

Generally speaking, unless SURC or Dr. Richard Videbeck wishes to experiment with our data base, no really unusual requirements are necessary for searching procedures at this stage. The searching strategies should be matching request terms with index terms. Boolean relationships include A AND B, A OR B, A NOT B, as well as nested combinations of these relationships. An interesting variant might include secondary word stems only in place of full terms to raise levels of searching generality, particularly if matching is to be attempted within the texts of stored abstracts (Field 30). We inten to do in-house searching, using optical coincidence cards (Jonkers Termatrex) which will be cheap retrieval indeed for specific searches for individuals. Generally speaking, computer searching will be reserved for paying customers and bibliographic lists initiated in-house. These are merely points of view, since costs have not even been guessed at.

The Boolean search techniques should be applied at least to:

1. Fields 28,29

and later 2. Fields 26 and 30 could be added

(See III. OUTPUT FORMATTING, below)

III. OUTPUT FORMATTING

Once the documents have been stored on mag tape, each document field bracketed by boundary codes because of their variable length characteristics, certain processing for output is necessary, some of which has already been contracted for. These presently provide for (See T-RM-79):

(A 1) Arranging whole documents in order by any field; usually Field 2 (Document Number).

(A 2) Insert tab card headers between groups of documents, the sequence of documents in each group specified on follower cards.

(A 3) Printing out documents in sequence, with headers in the following field sequence for each document: 23,24,2,1,3, (4,5) 6,7,8,9,10,11,12, 13,14,15,16,17,18,19,20,21,25,28,29,30. The spacing, etc., has been worked out with the SURC systems analyst, John Zwierznski. This output will form the text for Continuing Education Abstracts (CEA), experimental issue # 3.

(A 4) In addition, certain file updating capabilities are included, such as field updating, field data deletion, field data addition, document addition and deletion from the file.

(B 1) As far as CEA is concerned, next steps include the computer production of author and term (Field 28) indexes to documents included in a given issue. These steps involved stripping specified fields from documents, sorting, merging, and listing in appropriate format. (See T-RM-54). These operations are NOT now contracted, but will probably comprise the next programing effort.

(B 2) All of the present output is scheduled to be printed on the 930's output printer. Other options should include outputting on cards or paper tape or mag tape, with appropriate font and formatting instructions for input to either local or distant photocomposing machines. These machines, their capabilities, locations, and service rates are presently being investigated. Since SURC personnel have not yet decided upon the kind of output punch required for their on-going operations, all three possibilities should be considered.

In summary, one other programing area should be considered - thesaurus updating and print-out.

Presently, thesaurus terms are on punched cards, with assigned line numbers on them for sorting purposes. Since each main term may have several others associated with it, they form a decklet, making alpha sorting somewhat difficult. The format appears as follows:

```
AIR-FORCE
   UF   ROYAL AIR FORCE
   BT   ARMED FORCES
   RT   ARMY                                     UF = Use For
        COAST GUARD                              BT = Broader Term
        MARINES                                  RT = Related Term
        NAVY
```

In the thesaurus, correlative entries appear like this:

```
ROYAL-AIR-FORCE                                  U = USE
    U   AIR-FORCE
ARMED-FORCES                                     NT = NARROWER TER
   NT   AIR-FORCE
        ARMY
        COAST GUARD
        MARINES
        NAVY
```

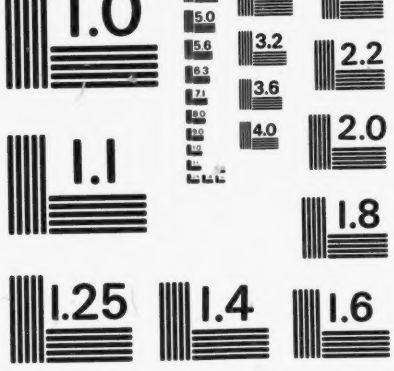
COMMENT: This "resonance" of the word AIR FORCE is typical of the characteristics of a thesaurus, and by no means the most complex example which could have been illustrated. The problem of updating becomes obvious a "map" of each word and where it appears in the thesaurus must be carefull followed if a term is to be added or deleted for instance. To change the scope of a term, i.e., altering its"map", might be even more troublesome. We should discuss these problems further; perhaps these complexities are not so severe as they seem to be.

The above considerations may serve as departure points for further discussi Approximately 1 week from receipt of this memo, you will be contacted for your opinions.

7 OF 7

ED

020489


1.0
4.5
5.0
5.6
6.3
7.1
8.0
9.0
10
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.1
1.8
1.25
1.4
1.6

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

APPENDIX 46

Continuing Education Abstracts, Experimental Issue, No. 1 (sample page)

HOME ECONOMICS EDUCATION

Schaeffer, Annette J.
A study of the comparative effectiveness of three communication channels used by a cooperative extension agent in teaching homemakers. East Lans-ing, Mich., Schaeffer, Annette J., 1960.
120 p. Eng. (M.S. thesis, Michigan State University) B-RE

73 housewives are randomly assigned to 1 of 4 groups for presentation of an instructional unit on teen-age nutrition. 1 group receives the communication in lecture discussion form led by a trained lay leader. A 2nd group views an open-circuit television broadcast which presents the same informational content. The 3rd group first views the televised presentation and then participates in a lecture discussion group. A control group receives no instruction. Pre- and posttests are administered to all subjects and mean achievement gains are compared. No significant pre-experimental differences are found among groups. The only significant differences on the posttest exist between all 3 experimental groups (considered as a whole), and the uninstructed control group. No significant inter-group differences are found to result from any particular treatment mode.
65 refs. WRU

INSERVICE TRAINING

American Association of School Administrators. Commission on Inservice Education for School Administration.
Guidelines for shaping the program. (IN In-service education for school administration.) Washington, American Association of School Admini-strators, 1963.
pp. 63-78. Eng. C-OV (1201 16th ST., N.W., Washington, Pub. address)

Attention should be focused on initiation, planning, orientation, point of beginning, know-how and knowledge, the individual, personnel, credit, flexibility, team spirit, simplicity, resources, policy and payoff. Detailed suggestions of how to meet the purposes of the program.

LCE CONTINUING EDUCATION ABSTRACTS
Experimental Issue Number One
Opinionaire

Is the amount of bibliographic information in each citation sufficient for your personal requirements? ____

If not, what other data do you require? ________

____

Is our form of bibliographic citation clear and useful? ____

If not, where can we improve it? ________

____

____

Are the abstracts informative enough to help you? ____

If not, how would you suggest that we make them more useful to you? ________

____

Would you prefer shorter ☐ OR ☐ abstracts?

Are the capitalized subject headings under which the entries are grouped of any use to you? ____

Can you suggest any alternatives or additions? ____

____

____

Please append any further comments, or better yet, write us a letter telling of your specific information problems and how you feel we might better be able to help you. Mail this form with your additions to:

Mr. Ronald F. Miller
Systems Officer
The Library of Continuing Education
at Syracuse University
107 Roney Lane
Syracuse, New York 13210

APPENDIX 48

Memorandum: T-RM-60   TO: Roger, Diana   FROM: Ron   Sept. 20, 1965
Staff and Files

SUBJECT: CONTINUING EDUCATION ABSTRACTS, EXPERIMENTAL ISSUE NUMBER ONE. Evaluation.

I. Summary of Experimental Issue Number One.

Production run, copies	300
Distributed to evaluator/users, Sept. 3, 1965	200

Costs:

Out of pocket expenses	$ 56.77
Cost per copy	.199
Estimate of total expenses, including labor	180.37
Cost per copy	.601

Synopsis of statistics:

Number of abstracts	71
Number of subject headings	42
Number of abstracts per subject heading	1.7
Number of pages, incl. introduction	24
Number of abstracts per page	2.9
Opinionaire returns as of Sept. 20	6
Abstracts of documents published during 1964-65	36
Abstracts of documents published during 1960-63	23
Abstracts of documents published during pre-1960	10
Research reports	17
Foreign	7
Foreign language	0

Errors

Punctuation	16
Spelling and capitalization	12
Reproduction: gray printing, blurred lines, etc.	--
Hyphens (drop-through from catalog card formatting)	8

The following document categories were included (see T-D-40, dated June 17, 1965, for further code explanation):

Code A. "Very thorough analysis. Applies to whole documents or to analytics. Full indexing and abstracting."	1
Code B. "Thorough treatment. Applies to whole documents or to analytics. Full indexing and abstracting."	30
Code C. "Less than thorough treatment. Applies to whole documents or analytics. Descriptive title, Issue number, Issue date. (Up to 5 primary terms and 10 secondary terms)"	40

II. Critique: Taken from staff discussions and opinionaires.

A. Content

1. Abstracts of Code A and Code B material should be as informative and as concise as possible.

2. Abstracts of Code C materials and below should be condensed, possibly telegraphic, and descriptive.

3. Style of all abstracts should be consistent. One person should be responsible for grammer, dropping meaningless phrases, formatting, terms, explaining cryptic words and the like.

4. Spell out "sponsor" instead of present abbreviation "spon". This is presently entered automatically by the flexowriter in field 9.

5. Perhpas abstracts of Codes A and B should be combined into one category.

6. Use either item number, class number or document number as organizing principle, for subsequent indexing of CE Abstracts.

7. Class or document numbers should occur somewhere in the citation.

8. Reformat the design to conform more closely to suggested specifications in T-RM-54.

9. Subject headings in CEA should correspond to the first subject heading in field 27 of the input form.

B. Form

1. Cover should be redesigned and include the following data: the device, Library of Continuing Education at Syracuse University, 107 Roney Lane, Syracuse, New York 13210, 476-5571, ext. 3493, title, issue number, issue date.

2. Same outside dimensions: 8 1/2" x 11"

3. Left margin binding; stapling to be continued until bulk becomes too large.

4. Punch for filing in loose-leaf notebooks.

5. Print copy on both sides of each page, reducing present bulk 50%.

6. Using photo offset at 30% reduction, we could get four documents per page (est. $4.55 per plate).

7. Go to two vertical columns. Estimated density, 100 documents in 12 1/2 pages.

8. Experiment with overprinting for bold face.

9. Address of publisher (field 23) should occur immediately after the publisher (field 12), when it is known.

10. We should begin see and see also references under each subject heading.

11. Eliminate all non-essential punctuation especially dashes (from catalog card format).

III. General:

1. Ron Miller will do a new sample format and run a test off-set plate of it for cost and appearance evaluation per above recommendations.

2. He will work with Mr. John Nolan of SU Press to redesign the cover.

3. We might think of issuing the service in loose-leaf form, one subject heading to a page, then users can add as received and we could issue annual or semi-annual control/title indexes.

4. Our reformatting of the CE Abstracts as well as catalog cards means that flexowriter control tape programs must be revised. If we have difficulty with our computer input tape, all-three programs will be involved in this work.

5. Deliberate about separating accession list from abstract function for time-lag of CEA presently is too long.

RATING INSTRUCTIONS TO USER-ANALYSTS

We would like to rate each abstract in three ways: for information content, clarity of writing, and pertinence to your professional interests. Using the codes defined below, would you rate each abstract in this Analysis Copy of CEA, and return it to LCE.

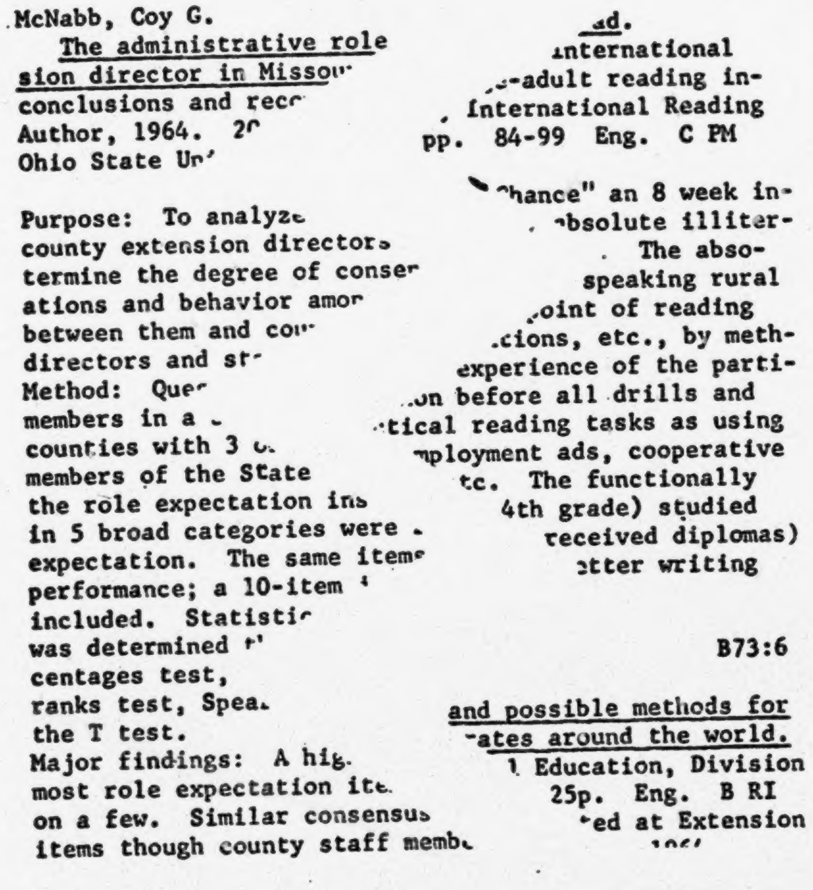
Content of Abstracts	Clarity of Writing	Pertinence of Documents
1: Abstract contains sufficient information for my purposes	A: good	H: Highly relevant to my interests N: No interest to me
2: Abstract contains insufficient information for my purposes	B: poor	M: Moderately relevant

An example of the application of these ratings is illustrated below:

1-B-M

Means:

sufficient
information
poor writing
moderate
pertinence



McNabb, Coy G.
The administrative role
sion director in Misso
conclusions and rec
Author, 1964. 2
Ohio State Un

Purpose: To analyz
county extension director
termine the degree of conse
ations and behavior amo
between them and co
directors and s
Method: Que
members in a
counties with 3
members of the State
the role expectation in
in 5 broad categories were
expectation. The same item
performance; a 10-item
included. Statisti
was determined
centages test,
ranks test, Spea
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Education, Division
25p. Eng. B RI
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2-A-H

Means:

insufficient
information, but
good writing
and highly relevant
to my interests

Please rate each of the 63 citations in this issue, using the scales illustrated above. The LCE staff will combine your responses into a composite judgment of the usefulness of CEA as an information tool for adult educators.

APPENDIX 50

CEA ANALYSIS WORKSHEET

I SUFFICIENT	2 INSUFFICIENT	A GOOD CLARITY	B POOR CLARITY	H HIGH REL	N NO RELEVANCE	M MOD REL	ABSTRACT NUMBERS	QUANTITY
							10 20 30 40 50 60	
							9 19 29 39 49 59	
							8 18 28 38 48 58	
							7 17 27 37 47 57	
							6 16 26	
							53	
							2 12 22 32 42 52 62	
							1 11 21 31 41 51 61	
							TOTALS	

USER NO. ________

COMMENTS:

APPENDIX 51

CEA - 2 USER/ANALYST COMMENTS

MEMO: T-RM-82 **TO:** Staff and Files **FROM:** Ron July 19, 1966

I was perplexed by the unevenness of the quality of the abstracts and wondered how many people had a hand in writing them. The annotations were of interest and, if qualified abstractors can be found, I would prefer annotations to bare abstracts. Some appraisal of quality would be of interest to practicing adult educators and to persons in other fields who might be perplexed by the ragged quality of the adult education literature.

By what procedure was the decision made regarding the length of the abstracts?

Age cannot be broken into useful segments or ranges on any one criterion and be most useful when another criterion is considered.

I do recoil at the "youth" grouping for the youngest adults, for I find the term misleading. My inclination is to break the age groupings as follows:

? - 25	Young Adult - Married, no children
26 - 35	Pre-school Children at home
36-50	Children at School
51 - 65	"Empty Nest"
60 - 80	Aged
80 - ?	Advanced Age

My inclination at this point is to suggest also that you index the name of the standardized test used, if one is used, and indicate clearly in the abstract whether an original or modified instrument is used.

Simply note the length of the conference, that is all you can safely and usefully do.

I like hypothesis and conclusions, major findings in all abstracts.

I thought most of the abstracts were well-written, objective (except for No. 40) and generally very helpful in keeping me abreast of the literature.

I ... question the subject categories used. There is an evident lack of a "research" category which would include those findings of psychological and sociological studies which are so important to the bases of adult education. And too, it seems that the categories do not take into consideration the kinds of categories that are going to make your system useful ten or twenty years from now.

A case in point for your system would be the field of gerontology which is likely to become a major preoccupation of adult education personnel -- administrators, teachers, and researchers.

What about a category on evaluation of adult programs?

Clarity difficult to judge where content = 2.

Content difficult to judge where pertinence = N.

Pertinence judgment would be easier if an "L" category were provided.

Some studies - 1,2,6, etc., follow a desirable form. Why not all studies of research in the same form?

The calibre of writing seems to be excellent. The majority of abstracts contained sufficient information. I personally prefer findings and rated abstracts "2" where these were not given if I thought that they could have been given. On the other hand, there were abstracts in which results were not given that I rated "1" because in my judgment the results would have been too extensive to report. Abstract 45 is a case in point.

We are concerned with how patients learn in a hospital or a clinic or in a physician's office. We are interested in what situations can be structured in a community through which people may learn more about their health. Such situations as meetings, work situations, surveys in which people take part, volunteer work from which people learn, etc., are of interest to us as is the whole area of community development and its educational implications. We are also deeply interested in the fundamental processes of learning and educating.

There was only 1 document abstracted with which I was personally familiar. That was # 46, the Dryer Report. The abstract seemed adequate. It is a difficult type of document to abstract.

Some abstracts (e.g. 45 & 46) unevenly report what it was the author wrote about while others summarize what it was the author said. (I hope I've made myself clear.) I find the latter more useful when there is a choice.

We feel that the abstracts are well written and believe that they epitomize the original document accurately. We also feel that the subject categories and the abstracts arranged thereunder are concomitant.

Mr. Narkis prefers a four inch line page format to the double three inch line format. In the sample, he encountered some difficulty in quickly finding the subject heading he wanted and thinks the subject headings at the top of each page confusing. I do not object to the two column page and in fact, think the three inch line can be read more quickly than a longer line. However, I agree that the break between each subject group of abstracts should be more clearly indicated and this could be accomplish merely by giving each new subject heading more room. Merely putting the subject heading in capitals ins't enough to differentiate it on the page.

We wonder if using quotation marks around titles of articles and underscoring titles of books wouldn't be a help to the user.

Also, we question whether it is necessary to indicate English language materials. Since the minority of the works abstracted will probably be in foreign languages, you could indicate just the ones which aren't English.

Mr. Narkis suggests that the first subject heading, "The Adult and the Participant" could be improved. As used, the terms "adult" and "participant" are assumed to be mutually exclusive which they are not. Perhaps you should consider using instead a heading like "The Adult Participant."

I found the abstracts to be quite adequate and most useful to me. I would hope that prices, whenever available, would be cited...

It would be of great help to me to get complete addresses so that I can write for particular items of interest to me.

My own desire is to use longer abstracts, but I don't know if this is feasible.

In all cases, the clarity of the writing, even if it varied from abstract to abstrac was reasonably good.

They all provided sufficient information (a) to enable me to decide whether the document or book would be of interest to me personally (i.e., they provide a useful guide to reading in the areas of special interest) and (b) to qualify as a useful aid to those planning the building up of a sound library and documentation centre o adult education such as we hope to establish in New Zealand...if the abstracts are intended to represent the significant information in a document then a number o the abstracts fall down on this count. This is particularly true of the abstracts which deal with studies, research projects and conference or seminar reports. In cases of conference or seminar reports, the purpose of the conference, the subjects discussed or examined and the nature and number of those participating are given in detail but no indication of the recommendations or conclusions. In a few cases, th approach is reversed (e.g. No. 38) where the conclusions and results are enumerated clearly but objectives and methods are not mentioned.

Quite a number of abstracts have received a "1" even though at first glance they appear to contain no more information than the abstracts discussed above. These include No. 20, 27, 39,42, 57, 58, 59. These are in the main abstracts dealing wit factual reports or handbooks and I find it difficult to envisage a fuller treatment in an abstract without almost reproducing the document itself.

Two important considerations in evaluating true experimental studies are: (1) was the sample randomly selected, and (2) were the units of the sample randomly assigne to the treatment and the control groups? Unless these questions can both be answer affirmatively, the statistical generalizability of the results is severely restric The abstract to be maximully useful should contain this information.

MEMO: T-RM-82

If pressed on the topic, I would make a breaking point at five days, based on belief that if the meeting exceeds a normal working week, it begins to take on a special quality.

Are you in communication with Darcie Byrns of the Federal Extension Service? He knows pretty well what's coming up in this field of adult education. I notice that you have very few references included. What about home education for adults? Do you have a contact on such studies? Again, there were very few of the recent studies from this field listed. Do you draw upon Dissertation Abstracts or do you try to get your references before DA's are published?

If you are going to use loose leaf for the abstracts it would be more useful to us to use the systems employed by Sociological Abstracts. e.g. This way, items in categories can be filed together.

APPENDIX 52

FORT-NIGHTLY REPORT OF DOCUMENT AND WORK FLOW. PERIOD ____________

BACKLOG COUNT

	TC			I			D			C			NOTES	TOTAL
	Last	Pres.	±	Last	Pres.	±	Last	Pres.	±	Last	Pres.	±		
EB													1	
EB													2	
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RD														
GA														
BR														
RM														
TOTAL														

Notes and Comments:
1. Editing work of analysts
2. Editing Flex output

LCE 0766

DAILY FLEXOWRITER TIME SHEET

DATE: ______________________ 196__
Day Date

FLD .23	DOCS. PROCESSED, BY DOC. NO.	KEYED	CORRECTED	CAT CD DATA TAPES	CEA DATA TAPES	COMPUTER DATA TAPES	CAT CDS.	TOTAL
TC								
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FLOW ANALYSIS SHEET (LCE 0014)

Doc. trace

Doc. No. ____________________

Search Data ____________________

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Lapsed Days

Ordered ____________________

Received ____________________

Access. list
(Date and No.) ← from access. list

Analysis ← from worksheet

Fields 28,29,30 ←

Fields 1-27 ____________________

Analyst feedback ____________________

Subject heading
verification ____________________

Doc. No. assigned ____________________

Doc. Shelved from routing slip

Data tape produced ____________________

Comparison of W.S.
& IF-1 ____________________

Technical check ____________________

Output ____________________

- CARDS ____________________
- CEA ____________________
- COMP ←

COMPUTER STORAGE ____________________

Total Elapsed Days

WORKSHEET
ROUTING SLIP (LCE 0115)

	Sel. Codes I, D, CA.	Sel. Codes C
1	IE	PM
2	RD	
3	DI	DI
4	IE	
5	PM	PM
6	LOG	LOG
7	DOCUMENT SHELVED	
8	Flex	Flex
9	EB	PM
10	RM	RM
11	Flex	Flex
12	CEA	
13	CARDS	CARDS
14	COMP.	COMP.

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WASHINGTON, D.C. 20006